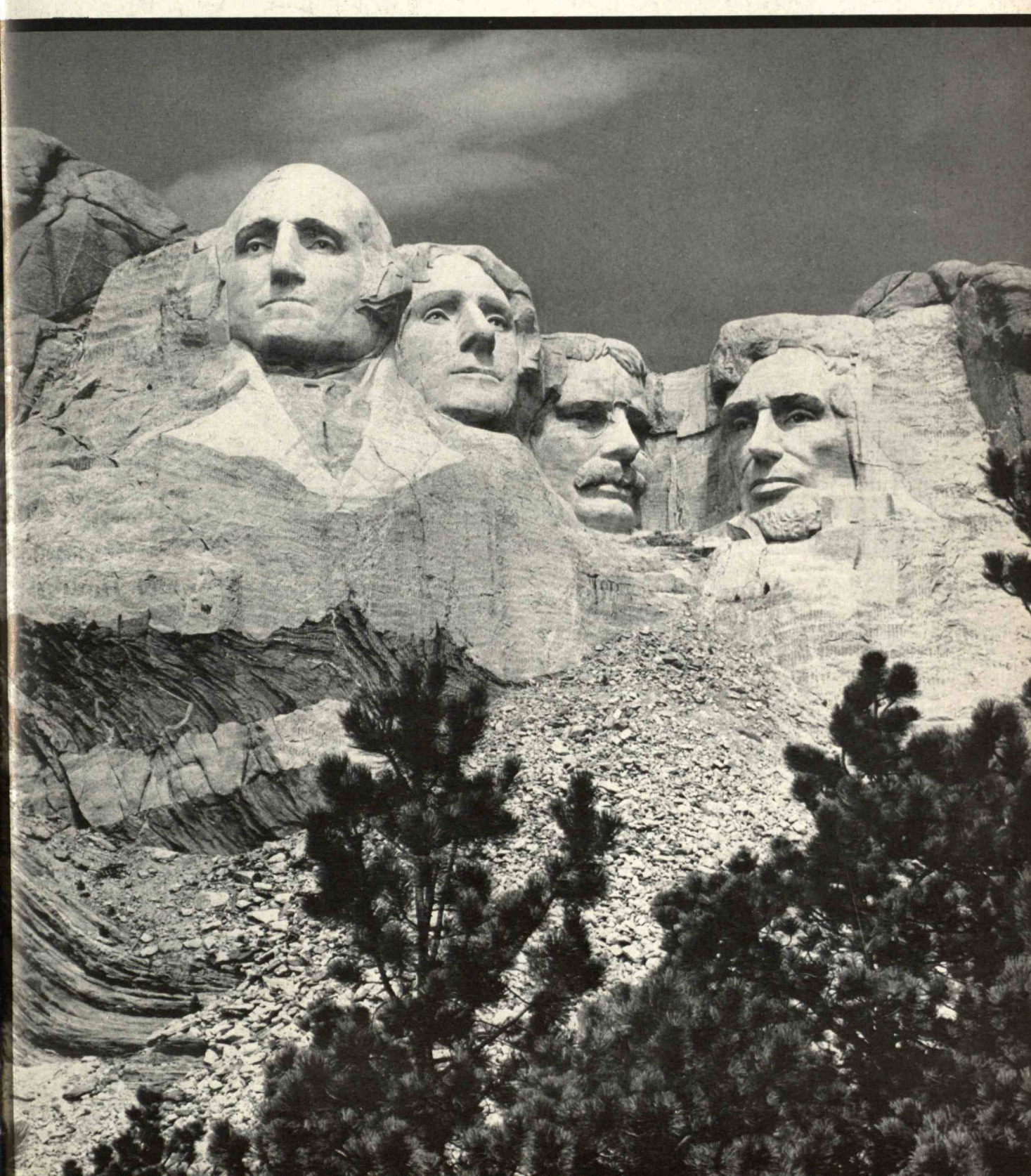


TECHNOLOGY

REVIEW

June 1956

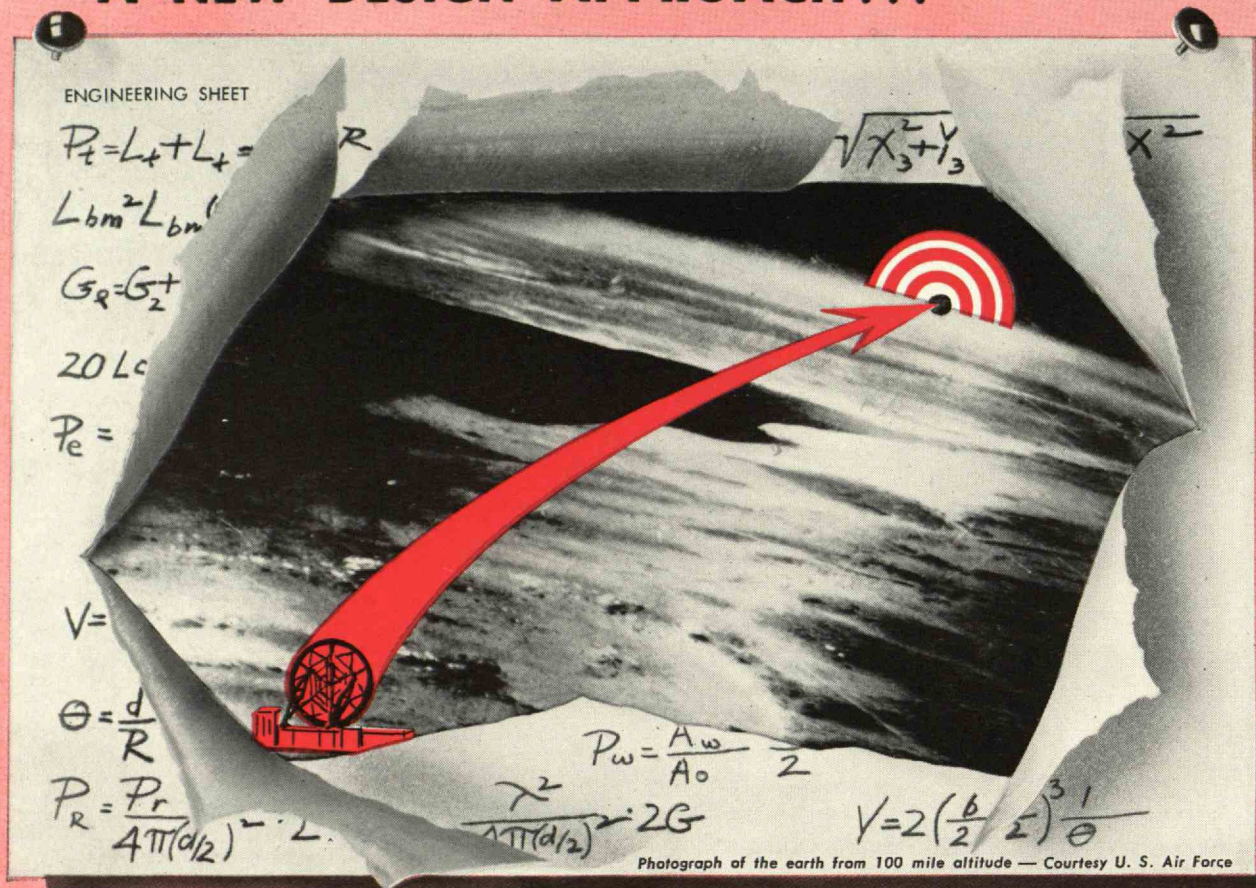


technology review

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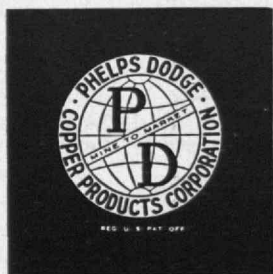
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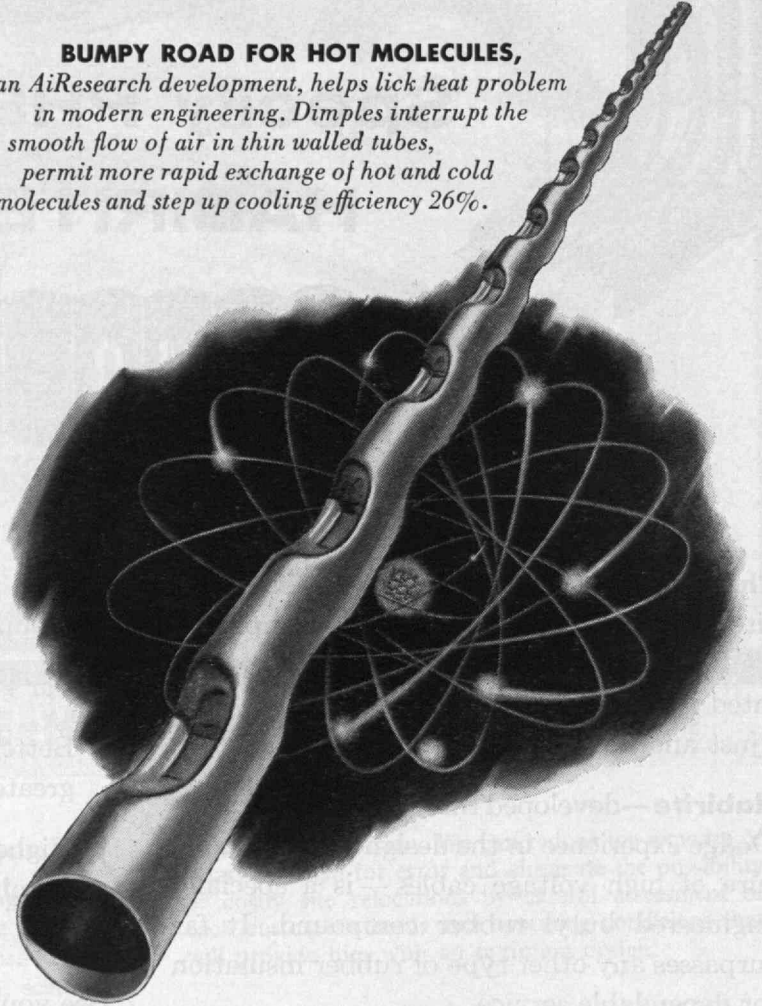
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Builders of Future America

*Excerpts from a recent address by Roger M. Blough,
Chairman of the Board, United States Steel Corporation*



"Somewhere in this day's twilight there is a boy sitting alone. He may be your son or a neighbor's son. He is thinking about his most pressing obligation — what to do with his life, what to make of himself.

"Out of nowhere, perhaps, will come the realization that he will find personal growth and confidence and the full life if he can only make a plane that will fly better in the air, or a machine that will run better on rails, or if he can make a device to lessen human drudgery in the home, or build a home so beautiful and so full of human satisfaction that it will excel all that has gone on before.

"For this boy . . . the answer may lie in the insatiable demands for fuel from under the ground and for power to turn the wheels of industry. Or for him, a deep-seated satisfaction may come from learning and knowing that the unfathomable atom can be harnessed.

"Somewhere in that young valiant mind . . . will emerge the image of men of science and men of engineering who became what they are . . . in the dedicated hope that their chosen career may afford them at least one fleeting moment of major achievement.

"That boy, though he may say little, will see in you, and the others like you, the builders of America. And when he sees that much, every thoughtful boy . . . will see a little more. He will see himself grasping your work, building mightily upon what you have built . . . He will see the great challenge of America for his own work and for his own life."

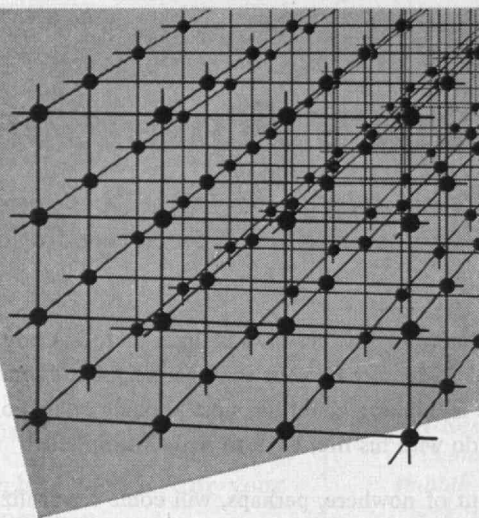
Today, when every effort is being made to focus public attention on the acute shortage of technical manpower, these excerpts from Mr. Blough's address are especially timely. They are printed here in the hope that they will remind Fathers — thinking of their son's careers — of the challenging opportunities the America of tomorrow offers men trained in the fields of science and engineering.

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THE TABULAR VIEW

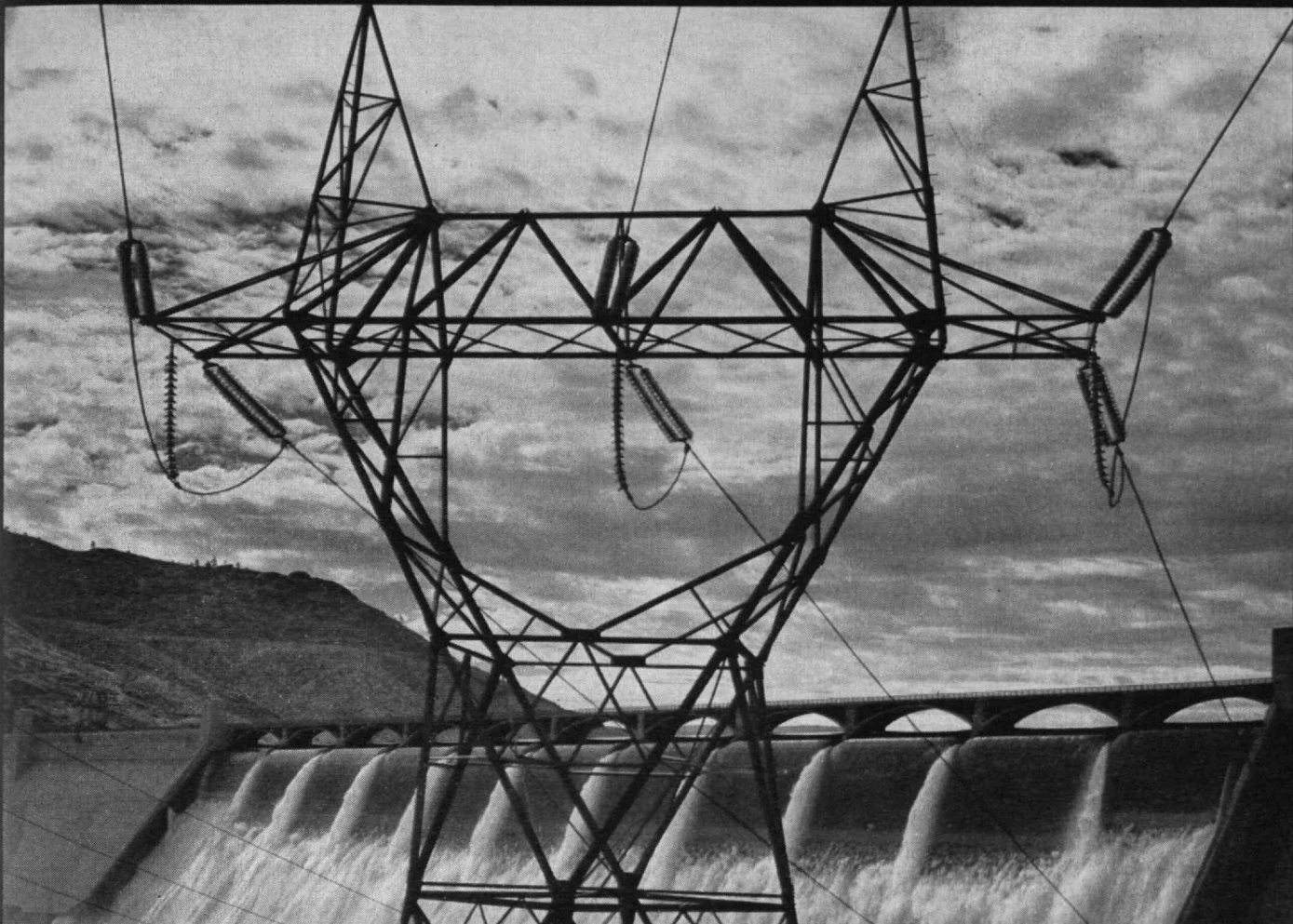
Only the Word Is New.—Few technical trends have attracted more universal and continuous attention than that currently labeled automation. Yet, in many respects, few terms are as well understood, for it is not uncommon for different persons to mean quite different things when they speak of automation. In "Trends in Automation" (page 399) PAUL COHEN, '35, records that automation "is a phase of mechanization" and, as such, is one of the forces that have created the industrial revolution. Recent improvements in techniques of measurement and control—to which progress in the development of automatic computers, servomechanisms, and feed-back systems are primary contributors—are likely to provide a contemporary acceleration to industrial mechanization. But, says Mr. Cohen, "from the evidence only the word is new, not the general technique it describes."

Mr. Cohen skillfully combines literary with engineering achievements, as indeed he has done since his student days at Technology. A native of New Bedford, Mr. Cohen took the Institute's Course in Mechanical Engineering from which he was graduated with an S.B. degree in 1935. He also has an M.S. degree in mathematics and physics. As an undergraduate he was associated with *The Tech*, becoming editor of that newspaper in his senior year. He was an instructor in the Department of English and History at M.I.T. in 1936, and was engineer with the United Shoe Machinery Corporation in Beverly from 1938 to 1946. Since 1946 he has been engaged in engineering and administrative work with the Sperry Gyroscope Company at Great Neck, Long Island, N.Y. Mr. Cohen has been a research engineer in mechanical engineering by vocation, and a skillful writer and interpreter of science and engineering by avocation.

There'll Be a Hot Time.—As aircraft are designed to fly at increasingly higher altitudes and ever-increasing supersonic speeds, a whole new group of design problems arise to plague the aeronautical engineer. One of the most important of these is that of creating a suitable environment within the craft, and particularly of making adequate provision for the insulation, distribution, and dissipation of heat generated within the air frame and that arising from outside sources during flight. The nature of these problems, and some of the possible means of alleviation are discussed in "Thermal Problems of High-Speed Flight" (page 403) by JACK W. RIZIKA, '47.

Mr. Rizika received the S.B. and S.M. degrees in Aeronautical Engineering from the Institute in 1947 and 1949 respectively. Following his graduation from the Institute, Mr. Rizika went to Harvard University where he studied in the School of Engineering Science and Applied Physics from 1949 to 1951, and then at the School of Business and Economics from 1951 to 1953. During 1953 and 1954, Mr. Rizika was project analyst at the Glenn L. Martin Company, and was also engaged in research work at the Institute.

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Cable insulation that can't take it ... is water over the dam!

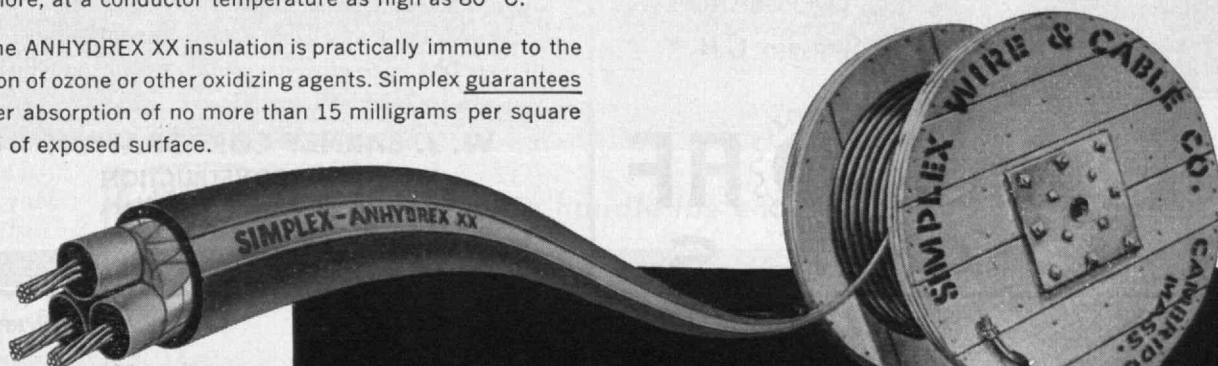
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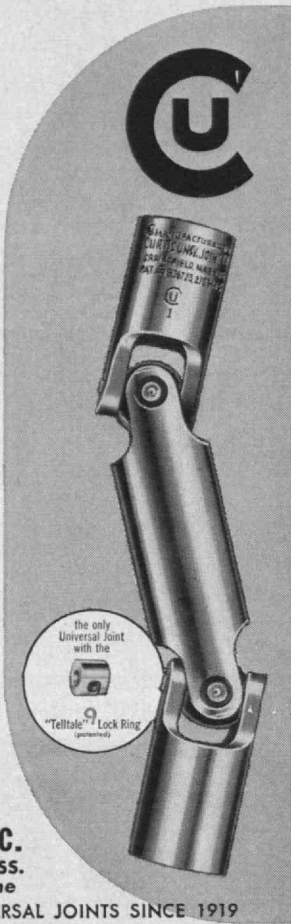
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THE TABULAR VIEW

(Concluded from page 388)

Since 1954 he has been engaged in aeronautical engineering at the Lynn plant of the General Electric Company. Mr. Rizika's first contribution to The Review was "Aeronautical Technology in the U.S.S.R." which appeared in the November, 1954, issue.

"When Pestilence Strikes." — Those who can afford a few evening's divorcement from "tee-vee" or the "moom pitchers" to devote to Lucretius' *On the Nature of Things* are likely to embark on a drastic — if temporary — change of intellectual diet. Despite the admiration it evokes for the cogitative powers of an ancient civilization, the concluding sections of *De Rerum Natura* are as mournful as any opera and provide a vivid description of one of ancient man's scourges — pestilence. In "The First Great Epidemic of History" (page 407) JAMES A. TOBEY, '15, takes up where Lucretius leaves off and examines that historic epidemic of 24 centuries ago from the modern point of view. Dr. Tobey brings to this work — as to his other writings in The Review and elsewhere — a vast knowledge of public health, law, and related matters.

After having attended the Roxbury Latin School, Dr. Tobey received the S.B. degree from M.I.T. in 1916. He went on to take an LL.B. degree from Washington Law School in 1922, an M.S. from the American University in 1923, and returned to M.I.T. for his Dr.P.H. degree which was conferred in 1927. His professional life has been spent in advancing public health and laws affecting it, in lecturing at such institutions as M.I.T., Yale, Harvard, and Columbia. He has been associate editor of the *American Journal of Public Health*, has written about 100 articles and 20 pamphlets. In addition he is author of *The Quest for Health, Personal Hygiene* (with A. J. McLaughlin), *The National Government and Public Health*, and *The Medical Department of the Army*. Dr. Tobey, a frequent contributor to The Review, has also served as a colonel in the Army's Medical Service in Texas.

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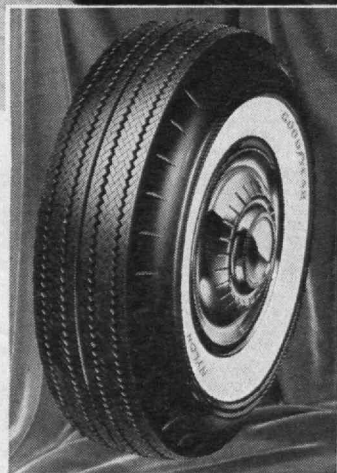
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THE TECHNOLOGY REVIEW

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Harold M. Lambert

Why does the Faculty think I
need a reading period?

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Raymond E. Hanson

Determination, Preparedness, Restraint

... are admirably portrayed in this statue of Colonel William Prescott at the foot of the Bunker Hill Monument in Charlestown, Mass. The characteristics portrayed in the statue by William Wetmore Story are as important today as on June 17, 1775, when the first major engagement of the American Revolution demonstrated that, even when substantially outnumbered, volunteer free men could well provide a match for regular troops.

THE TECHNOLOGY REVIEW

Vol. 58, No. 8



June, 1956

The Trend of Affairs

Cambridge Electron Accelerator

HARVARD University and M.I.T. will jointly design, build, and operate in Cambridge a six-billion-volt-electron synchrotron. The Cambridge Electron Accelerator, as it will be called, will be used for basic research in the structure of matter. Its purpose is to push back the frontiers of man's knowledge of the particles within the nucleus of the atom. The work of the accelerator will be of general and fundamental scientific interest.

The new "atom smasher" will be built at a cost of about \$6.5 million with funds provided by the Atomic Energy Commission.

Following formal approval of an agreement between the Executive Committee of the Corporation of M.I.T. and the Corporation of Harvard University, the two institutions have formed a joint management committee to operate the project. Work on the detailed plans will begin immediately, and the machine will be completed in about four years. M. Stanley Livingston, Professor of Physics at M.I.T., will be the first director.

Design studies for a large electron accelerator have been under way by a group from the Physics Departments at Harvard and M.I.T. for the past two years, supported in part by a joint program of the Office of Naval Research and the Atomic Energy Commission. On the basis of these studies, present plans for the Cambridge Electron Accelerator call for a machine which will accelerate electrons around a circular path 236 feet in diameter. The accelerator will be installed in a circular underground trench building with adjacent laboratories for experimental work. The tentatively selected site is on Harvard property adjacent to its Cyclotron.

Electrons entering the circular path at low energy will be accelerated as they whirl around it by 16 radio-frequency circuits, each requiring power equivalent to

a television transmitter. Forty-eight laminated magnets, each measuring $2 \times 2 \times 11$ feet, will guide the electrons around the orbit. These magnets will provide the strong focusing forces required to hold the particles in their path.

The electrons will emerge with the highest electron energy ever produced in any laboratory. They will move at very nearly the velocity of light; indeed, they will be the fastest particles ever accelerated by man. An electron moving at this speed, starting around the world at the same time as a beam of light, would be only five inches behind when the beam returned to its starting point. The increase in the electrons' energy in the machine will be accompanied — in accordance with the Einstein law for the equivalence of mass and energy — by a very large increase of mass: the emerging accelerated electrons will have a mass about 12,000 times that of the entering electrons.

Electrons with 6 billion electron volts of energy will be used as missiles to produce nuclear disintegrations or to generate high-energy x-rays used in turn to break apart nuclei. Such high-energy electrons are expected to produce heavy mesons, negative protons, and other new unstable particles with energies higher than can be obtained in any machines now in use.

The final design of the new machine will be carried out by a staff of about 30 scientists and engineers, including many members of the faculty and advanced students at both M.I.T. and Harvard. When completed, the machine will be available to all faculty members and research students at both institutions who wish to make use of its high-energy particles. In addition, its facilities will be open to qualified research workers from other New England educational institutions.

One-billion-volt accelerators of electrons are at present in operation at Cornell University in Ithaca, N.Y., and at the California Institute of Technology in Pasadena, Calif.

Soviet Aeronautical Scientists

THE Soviet educational system has trained a small but elite corps of aeronautical scientists who are second to none, according to a pioneering study of Soviet education in aeronautics, prepared by Leon Trilling, Assistant Professor of Aeronautical Engineering at M.I.T. But, adds the report, the Russian technical leaders are perched on a shaky engineering base.

The report also gives special emphasis to the Soviet doctrine that education trains skilled technical personnel for the service of the state. Aeronautical engineering receives special attention in the Soviet and quite possibly illustrates their best efforts. Nonetheless, many of the strengths and weaknesses of Soviet aeronautical education are probably representative of other areas.

The Trilling study was prepared by M.I.T.'s Center for International Studies and is part of a broad examination of the qualitative aspects of Soviet technical education being conducted by the Center under a government contract and a grant from the Carnegie Corporation of New York. The Institute's project on Soviet education is under the general direction of Alexander G. Korol, who was born in Russia and who was in the midst of securing an engineering education there when the revolution broke out. The Trilling study is the first major part of the project which has been completed.

In this country, a man trained as an electrical engineer has a wide range of employment opportunities. He may seek a job with a firm manufacturing electric appliances, or with a telephone company to improve the efficiency of communications networks, or with an aircraft builder to design automatic control or radio equipment.

The horizontal approach to engineering education in the United States stresses versatility and fundamentals, and requires institutions which are independent of productive facilities.

In the Soviet Union the situation is altogether different. Responsibility for the productive activity of the nation is divided among a small number of powerful ministries, each of which has full charge of a definite segment of the industrial economy.

Each ministry is responsible for many services and much auxiliary equipment needed in its main task: housing in newly developed areas, factory construction, light and specialized tooling, control equipment, safety equipment. In its own institutes each ministry trains the skilled personnel — engineers, economists, and others — necessary for its operations, in a process of vertical integration.

A mechanical engineer of the Ministry of Aircraft Production, for example, may be trained to design the same valves and piping as one in the Oil Production Ministry without any interchange of information between the two.

Despite its restrictions in certain areas, the Soviet system also permits a flexible use of top technical people within any given ministry. Key men carry a variety of responsibilities. They lecture at the university, supervise research at the aeronautical institute, serve as consultants to the industry itself. The Russian system works with apparent effectiveness, and permits

concentrated and integrated attack on any given problem. It has had its obvious successes.

Recent press reports have indicated that the Soviet aircraft industry has produced turbojet engines appreciably more powerful than those in mass production in the United States at the present time. This could not have been done if Russian scientists had not mastered the fundamentals of the problem independently and prepared a sufficient number of engineers to extend and improve good borrowed ideas in an original and skillful manner.

The Soviet regime undertook the task of training a large engineering force while at the same time enormously expanding the national industrial machine. Appreciable progress has been made in both directions, but much remains to be done to create a technical base comparable in engineering instinct to the American or German base.

"The Soviet situation," says Dr. Trilling, "may be the result of a deliberate policy which aims to get engineers into the industrial stream as quickly as possible and to enable the senior professors to educate the best graduates as carefully and thoroughly as possible."

But it also appears, he adds, that insufficient contact with mature creative teaching personnel and a strong emphasis on factual knowledge, useful for immediate applications in design and manufacture, have limited the number of young people who give promise of originality and show an interest in research by taking an advanced degree.

This has resulted, says Dr. Trilling, in the present emphasis on graduate correspondence courses, the financial rewards offered for an advanced degree, and the fact that the scientist is now praised as the prime builder of the Soviet state — a trend that is likely to become stronger.

Dr. Trilling has been assistant professor of aeronautical engineering at M.I.T. since 1954. His chief fields of study and interest are aerodynamics and fluid mechanics.

How Dry I Am

MOST of the larger animals can survive longer with ample water but no food, than with food and no water. The reverse is true of rats. Indeed one rodent, the kangaroo rat that dwells in arid regions, drinks no water at all, getting all the water it needs from its foods. One reason why it can do this is that its kidneys have a remarkable ability to eliminate salt; in other words to excrete a very concentrated urine. A similar faculty, it has just been discovered, is possessed by the one large (huge, in fact!) animal that can do with little water. This is the camel, the familiar desert beast of burden.

Folklore once held that the camel stores water in its hump; but this excrescence is actually nothing but fat. A later, but equally erroneous, idea was that the camel holds water in one of the several stomachs it possesses, like its fellow ruminant the cow. This has been proved experimentally not to be so.

But now a year-long intensive study of the physiology of the camel has discovered how this beast can go for such long periods without a drink. This study,

sponsored by the United Nations Educational, Scientific and Cultural Organization, the Guggenheim Foundation, Duke University, and several United States government scientific agencies, was conducted in the Sahara Desert, at a location where temperatures go as high as 140 degrees F.

The camel's unique ability turned out to be based on three special faculties. This animal wastes little of the water taken into its body; it thrives despite high internal temperatures; even when severely dehydrated it maintains the water level of its blood. The camel (like the kangaroo rat) is extremely thrifty with respect to water lost with the excreta. Camel dung is virtually dry; that is why it makes an excellent fuel for the desert nomads. Although mature camels weigh over 500 pounds, they excrete less than a pint of urine a day, even when they are drinking all they want.

The camel rarely needs water to cool his body by means of evaporation. Most animals maintain a uniform internal temperature regardless of the ambient temperature. If the environment is hot, they cool themselves by evaporating water from the skin (as does man) or from the tongue and respiratory tract (as does the dog). The camel rarely sweats, and never pants as dogs do when warm. As a result the camel's internal temperature is not constant, but ranges all the way from 93 degrees F. to 104 degrees F. Such a variation would prostrate any other mammal, but does not bother the camel. The upper limit appears to be about 104 degrees F., however; when a camel's internal temperature reaches this point, it starts to sweat.

Since the camel's environment is frequently hotter than its internal temperature, and since it ordinarily does not sweat, its heavy fur serves as insulation to exclude heat. This fact was established by observations of clipped animals.

When most animals are deprived of water, all their body fluids dry out at about the same rate, and dehydration of the blood stream is an immediate cause of disability. In the camel the normal water level of the blood is maintained, even when the rest of the body is markedly dehydrated.

Like the kangaroo rat, the camel frequently does not need to drink at all when it has plentiful access to vegetation, and the season is cool. Even during the scorching Sahara summertime, camels given unlimited grass for grazing drink only about twice a week. If denied water and fed a dry diet, the camel loses weight through dehydration but remains vigorous. Thus one camel that did without water for 17 days lost about 200 of its original 660 pounds. Less dehydration than this would kill a man, or most of the other larger animals. When this animal was given water to drink, it imbibed the amazing quantity of 16 gallons in 10 minutes!

This study was sponsored by the Committee on Arid Zone Research of the United Nations Educational, Scientific and Cultural Organization. The findings, aside from considerable theoretical interest, are valuable in providing understanding of the physiology of a useful domestic beast of burden. Further, this knowledge adds to information about life under arid conditions, important because of the sizable areas of the earth now covered by deserts.

Generators for Aircraft

THE provision of electric power in aircraft becomes increasingly difficult as the speed and altitude of flight increase. The relatively large values of electric power generated per pound of equipment in subsonic aircraft are achieved by employing the low-temperature environmental air, directed as a blast through the generator, to remove the generator heat losses and limit the internal temperature. As actual and projected flight speeds increase, the air blast becomes less effective as a cooling medium because the stagnation temperature of the air approaches and exceeds the allowable temperatures of the insulating materials, bearings and brushes of the generator. To handle the cooling problem, the present trends in generator design have been to introduce new materials which are able to operate at higher temperatures, to employ a circulating coolant (such as oil) and an external heat exchanger or to depend upon the evaporation of liquids for cooling. The present military Class C generator is required to operate with blast air at an inlet temperature of 120 degrees C. at all altitudes; the next projected requirement is for a so-called Class D generator which must operate with blast air at a temperature of 250 degrees C.

Under sponsorship of the Air Force a group in the Energy Conversion Laboratory of the Department of Electrical Engineering has been studying the thermal problems of electric-generating systems for aircraft operating at speeds up to Mach 4—four

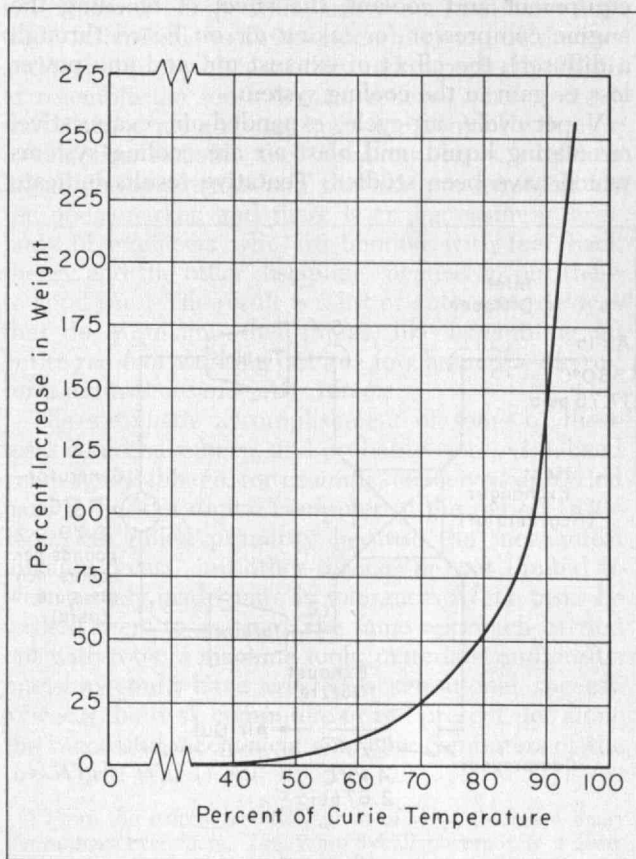


Fig. 1. Increase in generator weight required for a given output as the operating temperature approaches the Curie temperature for the magnetic materials of the machine.

times the speed of sound, or approximately 2,700 miles per hour — and altitudes up to 100,000 feet. The study is being carried out in two phases: the first phase involves the determination of the maximum temperature at which the electromagnetic (rotating-machine) process of energy conversion is feasible, based on ideal insulating and lubricating materials; the second phase requires the determination of optimum combinations of generators and cooling systems for aircraft operating at specific design points ranging up to speeds of Mach 4 and altitudes of 100,000 feet. The purpose of the first phase of the program is to project the results of the continuing work on high-temperature materials to the point where the energy-conversion process may be limited by other factors. The purpose of the second phase of the program is to make specific recommendations for over-all systems.

The limiting factor in determining the maximum operating temperature of generators having ideal insulating and lubricating materials is the Curie point of the magnetic material, or the temperature for which ferromagnetism disappears. As this temperature is approached, the cross section of magnetic material must be increased, so that the weight of the generator is increased as shown in Fig. 1. A generator operating in the vicinity of the Curie point of silicon steels (740 degrees C.) could be blast cooled at speeds up to Mach 4 at altitudes above 40,000 feet.

The over-all systems of generators and cooling devices for the second phase of the study have been compared in terms of an equivalent drag penalty. This criterion takes into account the weight of the equipment and coolant, the effect of bleeding the engine compressor (or taking air on board through a diffuser), the effect of exhaust air, and any power loss or gain in the cooling system.

Vapor-cycle, air-cycle, expanded-air, evaporative, circulating liquid, and blast air are cooling systems which have been studied. Tentative results indicate

that for aircraft speeds from Mach 1 to Mach 2, blast-air cooling provides the optimum system for a conventional generator and isolated cooling system, whereas at speeds higher than Mach 2 expanded-ram-air systems are preferable. A promising regenerative expanded-air system for operation at Mach 3 is shown in Fig. 2. The expanded-air systems have been optimized for use with a conventional generator and the generator design is being studied so that the parameters of an optimum system can be determined at each flight design point.

The results of this study are of importance both for specific information obtained at the flight design points and for setting up a procedure for optimizing this type of energy-conversion system using the facilities of a digital computer such as Whirlwind. The program is directed by Alexander Kusko, Associate Professor of Electrical Engineering. The present members of the group are: Thomas H. Putnam, instructor; Amiya K. Sen, teaching assistant; Richard M. Moroney, Jr., '51, assistant; and Peter G. Hjertberg, assistant — all members of the Department of Electrical Engineering. Much stimulation and guidance has come from Erwin Naumann of the Equipment Laboratory, Wright Air Development Center.

Acoustics Congress

MORE than 500 of the world's leading authorities on sound and noise control will take part in the second International Congress on Acoustics in Cambridge, from June 17 through June 23, 1956, for which Harvard University and M.I.T. will be joint hosts. The international meeting is sponsored by the International Commission on Acoustics, which is part of the International Union of Pure and Applied Physics. The sessions will be held in conjunction with the 51st meeting of the Acoustical Society of America, a member society of the American Institute of Physics.

The Congress will be the largest technical meeting on acoustics in history. More than 100 technical contributions have been received from abroad; they will be presented by scientists from Argentina, Belgium, Canada, Denmark, England, France, Germany, Hungary, India, Italy, Japan, The Netherlands, Norway, Russia, Saar, Sweden, and Turkey.

The technical program for the Congress will be organized around three major symposia: (1) bioacoustics and noise control; (2) architectural and musical acoustics; and (3) physical acoustics and sonics.

Richard H. Bolt, Director of the Acoustics Laboratory at M.I.T., is chairman of the Planning Committee for the Congress, and John A. Kessler, '48, Executive Officer of the Acoustics Laboratory, is Congress secretary. Local committees handling arrangements have been organized by the Acoustical Society of America at the request of the International Congress. They include representatives of both host institutions as well as members of many other scientific and industrial organizations in New England.

The Congress will open with an international reception on Sunday evening, June 17, and an international convocation Monday morning. Technical sessions will continue all week, with a closing banquet on Friday evening, June 22.

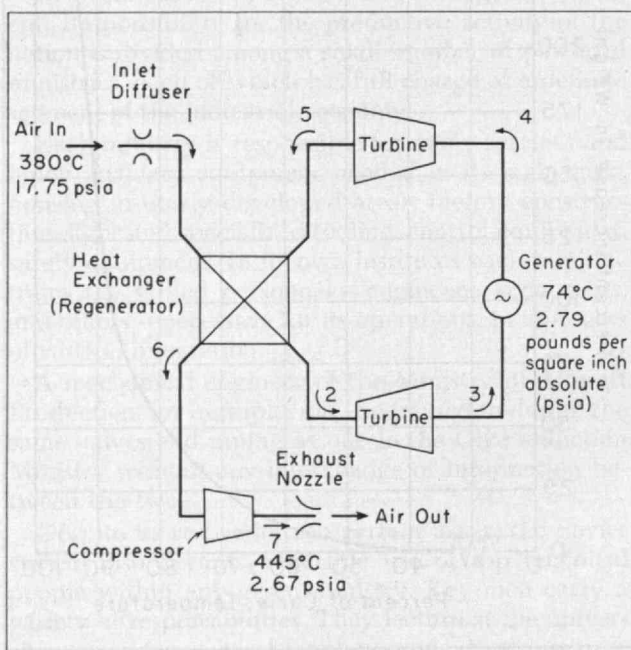


Fig. 2. Diagrammatic representation of a regenerative expanded-air system for cooling an electric generator at aircraft speeds in the vicinity of Mach 3.

Trends in Automation

New Tools of Technology, Such as Automatic Computers, Servomechanisms, and Feed-Back Systems, Spur on the Age-Old Drive toward Mechanization

By PAUL COHEN

BECAUSE it bears directly on the general standard of living, on the employment conditions for labor, and on the profitability of industry, there are few technical trends that attract more universal and, by and large, more continuous attentions than that currently labeled automation.*

From the evidence only the word is new, not the general technique it describes. Automation is a phase of mechanization, one of the forces that created the industrial revolution. There have recently arisen in this general area some concepts which may have genuine novelty and great, if as yet incompletely visualized, possibilities. Among the more prominent are feed-back devices and automatic general purpose computers — particularly digital types. But there is as yet no reason to regard them as relatively more revolutionary in their present environment than were, say, the use of mechanical instead of animal power in machinery, interchangeability, or the assembly line. The introduction of the first powered-textile machine was as much automation as the installation of a multi-million-dollar production line in a Detroit factory. There were some 80,000 patents granted for labor-saving devices by 1880. In fact, we have had automatic equipment, each exploiting the art of the day as fully as possible, at least since the days of the Romans. We have had automatic factories† in this country long enough for some to become great financial successes and then fade into obsolescence.

In the past, however, these examples of automation have replaced operations which, from the human point of view, were relatively simple. But not always. The Jacquard loom of 1801, which received the data for an intricate weaving pattern from a large stack of punched cards and is still in use, the monotype machine or the ordinary player piano, contain concepts of open-loop control which are being exploited with some fanfare in many of our present numerical control devices. But the phrase "open loop" is significant. These older examples of automation would shut off a valve when a float signaled that a tank was full. They would turn on an oil burner when a thermometer said the temperature around it was lower than a set value. They would deliver a nail down a chute to a pre-assigned location and then hammer it

in. They would even tie a knot in a piece of string. But if something went wrong they would continue to shut valves, hammer nails, and tie knots regardless of the resulting confusion. The operations were simple because the tools, and this means conceptual as well as physical tools, with which they would be performed were relatively few. If too many of these devices were assembled in series they either tended to cost more than the human being who was previously doing the job, or they had the unforgivable sin of unreliability.

But lately, the technology of automation is beginning to cash in on a series of developments in automatic computation, feed-back theory, and servomechanisms; and on a host of devices which can sense the environment around them in terms of shaft position conductivity, pH, velocity, sound or light intensity, chemical composition, and so on. In other words, there is available to the engineer a group of devices and techniques which, crudely and imperfectly, begin to resemble the sense organs, reflexes, and memory that make a human being such a marvelously flexible mechanism. Reliable and ingenious relays, switches, linear potentiometers and the like are available on the open market, and there is an increasingly large body of engineers who are familiar with feed-back theory and the other disciplines needed to put them to good use.‡ The result is a list of automatic devices that do quite imposing things, like assembling an entire radio or working out in a few hours the payroll for a multi-thousand labor force.

The automatic accomplishment of some of these tasks could have been, and probably were, visualized years ago. Babbage, for example, conceived and tried hard to build a digital computer in the period 1830–1840. He failed primarily because the mechanical linkages, gears, and other devices he was limited to were grossly inadequate in tolerances to the tasks he wished them to assume. The same approach carried out with today's machine tools, materials, and craftsmanship could have created a sensational success. Witness the desk computers of the present, let alone the successful mechanical analogue computers of the pre-World War II era.

‡ From the strictly historical point of view, there are many forerunners even here. The Watt flyball governor is a feed-back device. The pneumatic cylinder which in 1868 steered the Whitehead torpedo in response to the commands of the depth and tilt-sensing devices was very likely the first true servomechanism.

* Coined by, Delmar S. Harder, Ford Motor Company, in 1947.

† The oil-well casing and automobile frame plants of the A. O. Smith Company are notable examples dating from the twenties.

Today we do have large digital computers — of extraordinary speed and capacity as compared to some of the mental functions of which human beings are capable (and of extraordinary limited abilities in comparison with others). In fact there is a tendency to regard the digital computer, and perhaps rightly, as a true innovation to the art of automation, much more so, say, than the highly automatic transfer machines of the automotive industry. This comes, perhaps, from the intuitive realization that the flexibility of the digital computer — its relative generality — is a more humanlike trait than the ability to handle the most complex but fixed task. Even the translation of texts from one language to another is now a function which can, to some extent, be programmed for machine operation. And because of the flexibility that follows from the fact that a new program means a new output — in a real sense a new machine — the large-scale digital computer may become among the more important mechanical modifiers of our culture. This is said not because they may replace much clerical labor (which, except temporarily, is highly unlikely) or that they may create a large number of new jobs and careers (which is quite likely). Their great promise would seem to be that they are already stimulating many fields of science and engineering and will, in all probability, help to implement the theory and art of decision making in the business world. Computers have little physical aura of glamour about them. They do not make as much noise as a boiler factory, or move as fast as a jet, and they are not nearly as large as an ocean liner. But they can help man to think — his most explosive activity.

Broadly, therefore, it is the availability of new tools rather than of new incentives that is presently accelerating the pace of automation. Programs to accomplish tasks of a given complexity are now possible with a smaller expenditure of capital and engineering effort, relative to the resources of the past. Complicated systems can achieve a measure of accuracy and reliability previously impossible.

For convenience, some of the more interesting applications of automation will be grouped into three general fields. The first is the one which makes most of the headlines — the automatic, mass production, machine tool and the automatic factory. As has already been pointed out, this is an extension of an existing trend. The multi-station transfer machines of the automotive industry, dating from 1924, and the continuous flow plants of the petroleum industry are cases in point. In adjusting the product in accordance with measurements being made automatically of its properties, there is a growing use of analogue computers. The relationships between inputs and outputs can generally be expressed by a simple enough equation so that a small analogue computer is adequate. An analogue computer is a model of a physical situation. Since it cannot be an "exact" model (because of the imperfections of human workmanship), it is not an exact equivalent of the equation which also describes the same physical situation. In the present state of technology of analogue computers, an accuracy of one part in a thousand is good. One part of error in 10,000 is very good. But, as analogue computers wear or age, they depart only grad-

ually from their original configuration. Therefore, as compared with digital computers, they are more likely to deteriorate slowly rather than to make catastrophic errors and, for this reason, have an important advantage in situations, commercial or military, where a huge and sudden departure from a correct value cannot be tolerated.

These may be the symbolic processes of American industry but they are not typical. The average size of a batch of parts going through an American production plant, however much larger it may be than the average lot in other countries, is probably less than 10 pieces. Our factories, for example, are full of special purpose machines made in limited quantities. Rolling stands for steel mills are not ordered in gross lots. For every airplane that goes into production, many must be built in prototype form. An immense amount of machining is associated with the country's research and development effort.

This is what makes the second category of automatic devices, the so-called numerically controlled machine tools, of such interest, for it is the expectation that they will eventually lower machining costs for small lot work without the use of expensive jigs, fixtures, templates, and other production accessories. There has been a rash of attempts, led by M.I.T.'s development of a tape-controlled milling machine[§] to guide machine tools directly from recorded instructions. These instructions are not in the conventional form (as far as past automation practices are concerned) of cams, templates, limit stops, and so on, but go directly from the dimensions on the blueprint to a code. The means by which the code is fed into the control system is not fixed. Punched tape, magnetic tape, and punched cards have been used, and other mediums can be visualized. What is important is that the control unit can obey any instruction which the machine it is controlling can accomplish, and that the system of control is inherently independent of the type of machine tool it is associated with, as long as provision is made for the number of servos and commands that are needed. In other words, the same black box can control a milling machine or a planer, and the tape can carry instructions for machining a wing spar or a die for a new lipstick container. Note that the elimination of a machine operator, or at least a reduction in the scope in his duties, does not necessarily represent a net labor saving. Behind the scenes must be placed a new employee — the programmer who reads the drawing and, knowing intimately both the code and the machine, translates (possibly with the aid of a fair-sized computer) the draftsman's instructions into signals which the machine can understand. This person or group, who not only determines the sequence of machining operations as would a methodizer, must also determine the cutting speeds, when to turn on the cooling fluid,

§ M.I.T.'s contributions to this field start much further back. Among them were the analogue computer developments of the 1920's associated with the name of Vannevar Bush, '16, and the work touched off in the field of servomechanism theory by the contributions of Professor Harold L. Hazen, '24. The Digital Computer and the Servomechanisms Laboratories of the postwar era also helped to create the environment in which numerical control techniques could grow successfully.

when to stop, and so on. Behind him is an array of technicians who develop, design, build, and maintain the new equipment.

Particularly when production runs are small and the number of machining axes is large, there appears to be an important area of usefulness for such devices. A gang drill, for example, has only one controlled axis. A lathe or conventional shaper has two; jig borers have three. Milling machines can have three or more. Numerically controlled, multihead skin mills for aircraft factories are already in operation. Many other forms of numerically controlled tools, among them noncircular gear cutters, lathes, and punch presses of the turret type, and cam generators, are either in the development stage or available for production. A device which is in the same spirit, if not classification, is a boring machine to which is attached an automatic gauging section. If the pieces tend to run, on average, under or oversize, a feed-back circuit repositions the tool to correct the situation. The advantages of numerical control may not all be direct. Tapes or cards are easy to transmit and store as compared to jigs and other aids to machining. If production increases, they are far easier to duplicate.

Today, at the job shop level of production, control is generally in the hands of experienced machinists working from the blueprint and perhaps methodizing instructions. Frequently an elaborate set-up procedure is necessary before machining can start. Accuracy and machining speeds are dependent on the skills and judgment of the operator. More rarely, recourse is had to the wide variety of available duplicating machines. These, of course, require the prior construction of a template or cam or, at best, the adjustment of a bank of limit stops. In other words, the designer of a part destined for small production finds that, unless all economic barriers are removed, the manufacturing techniques he can resort to and the shapes which he is free to draw on his boards, are limited. The designer of a mass-produced part has relatively greater freedom. His surfaces can be irregular; he can combine many pieces into one complex casting or forging. A wing spar for an Air Force interceptor was recently forged on a 35,000-ton press in one piece, replacing an assembly containing 68 parts and 800 rivets, and saving about 25 pounds of weight. But for most small-lot work, forging dies are prohibitively costly. The designer of the usual prototype part is under great pressure to confine himself to simple geometric shapes. If numerical control of machine tools could, even to a small extent, permit increased complexity of shape in small-lot parts, it could significantly accelerate the progress of development work. It has also been suggested that in another area, that of consumer goods, this production flexibility may permit a revival of custom-made items adjusted to individual needs or whims.

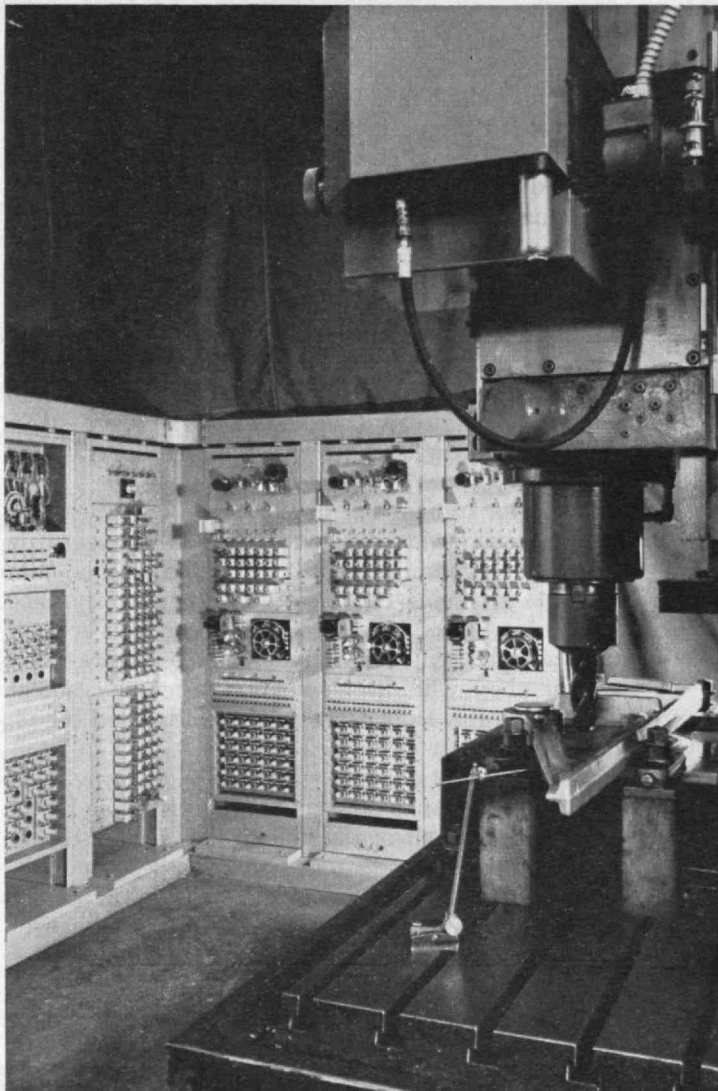
Another area of automation has to do with the manipulation of numbers — data processing. This has hitherto been the domain of the clerk and white-collar worker, and much more rarely, the mathematician. Although increasingly assisted by desk computers, punch-card equipment, and a few other business machines, no avenue for mechanization has yet ap-

peared in this field which is as promising as the digital computer. Here, predict many, is where automation will most sharply affect our present business procedures.

The temptation at this point is to discuss the facet of this situation with which the engineer is most familiar, the automatic computation of technical or scientific problems. The digital computer was developed specifically for such purposes and has to date found its most numerous applications in this field. Analogue and digital computers have given the scientific community the opportunity to make numerical analyses of many problems where mathematical approaches were known, but where the manipulative complexity of the technique or its extreme tediousness prevented any but a symbolic attack. There are cynics who say that the symbols themselves are sufficiently informative so that the substitution of numerical results adds not quite so much information as might be expected. A very natural tendency to let the machines produce more graphs and numbers than are actually necessary is undoubtedly present, and with it a replacement of analytic effort by a greater

A striking example of the progress that is made possible through new tools of technology is the M.I.T. numerically controlled milling machine whose operations are controlled by punched tape processed by an electronic director shown in the racks of equipment in the background.

M.I.T. Photo



than necessary processing of charts and tables. Overall, however, such computers have helped to make possible some notable technical successes. Much of the work in the area of control and instrumentation would go on in a slower, more empirical fashion, or not at all without computers. Another illustration is the application of automatic data processing to weather forecasting, where the need for speed as well as the overwhelming mass of data make the machine the logical choice. For quite the same reasons, the problem of handling air traffic may soon also require computer assistance.

It is interesting and even instructive that these computers, which can compute, allowing for the man-power requirements of programming, maintenance, and other consequences of large-scale equipment, at rates orders of magnitude faster than human computers, have created an employment problem, but not of the type one might expect. Mathematicians and human computers are now in far greater demand than ever before. The field of mathematics known as numerical analysis has been stimulated to more rapid growth, and other mathematical procedures adapted to machine computations are likewise attracting more attention. There is a tendency for substantial staffs of mathematicians, programmers, and technicians to accumulate about each new computer, forming a sort of symbiosis of men and machines.

The types of problems previously handled by hand are as numerous as ever and still handled largely by hand. Added to this load is that of providing check points for the computers. Since these are used for equations which would have been avoided as unworkable in the past, the problem of manual checking is not a trivial one. Since there is a threshold of size and time, constantly sinking as improvements in programming and computer technology accumulate, below which automatic computations are not economic, these new machines are attacking problems which are new at least in magnitude, and for this reason represent fields from which science was effectively barred in the past. Some of the scientific fields in which the accuracy and/or capacity of the digital computer has already been demonstrated are stress analysis, geodesy and triangulation, and operational analysis.

It can be argued that in the commercial field the picture is somewhat different because the large-scale processing of numbers is already going on, and that the new machines being introduced into insurance companies, banks, railroad ticket offices, and government agencies will not so much process more numbers as they will displace labor. The government alone, says the Hoover Report, spends four billion dollars a year on routine clerical work.

Whether, overall, any white-collar labor will be displaced remains to be seen. One contributing factor to the introduction of the machines is an increasing difficulty in getting adequate help. Another is a deliberate hunt for new ways to make decisions in a more rational and less intuitive fashion. The presence of the equipment tends to encourage the creation of new information. Although added intelligence and the quicker delivery of data for decisions are factors

of intangible value, past experience has tended to show that increased information with which to carry out the management function is so important that it permits the maintenance of large nonproductive staffs.

An application of extraordinary implications, although still very much in the exploratory stage, is the so-called mechanical translation. The field is already graced by a book and numerous other publications, to which reference should be made for a greater understanding of this difficult but significant problem.

It is hard to escape the conclusion that, quite possibly, the ability of general purpose computers, in the hands of an intelligent and competent staff, to create much more useful data for executive decision than is now available, could correspondingly permit the absorption of an even larger share of an organization's energy in this direction than is now the case. A crude analogy is where a metal is little used because it is high priced, but where consumption increases enormously, with a corresponding rise in the work force, when the price is reduced. Not to be overlooked is that computers will continue to require continuous monitoring not merely for errors, but much more for the special case. A computer can only handle situations for which a rigid line of reasoning, and an accompanying program have been worked out by human minds and hands. The emergency, the "one case in a hundred" that has an added element, the more frequent cases where judgment based on criteria not applicable to the ordinary situation calls for a decision contrary to the logic impressed on the machine, require a human being standing by.

Automation is not cheap, nor completely reliable, nor free of error. Neither are people. Depending on the state of technology at a given era, and the pressure on the human population to find gainful work, a complicated, multidimensioned equilibrium region exists between the jobs that can be done and are worth doing by some machine, and the chores which are best left to human hands or, increasingly, minds. To complicate the situation is the almost inevitable tendency of automation to breed new jobs. A large number of them are in tending and programming the new automatons which do not speak the language of humans or know what to do when they get into trouble.

Apparently a social organization reacts to an increased amount of available energy by growing larger or more complicated. We thus find the continued paradox of jobs being taken over by machines, and a demand by industry for labor that continues to grow. To quote the late Philip Murray: "I do not know of a single solitary instance where a great technological gain has taken place in the United States of America that it has actually thrown people out of work. I do not know of it, I am not aware of it, because the United States in the past 25 years has brought into the employment field an additional 20 million people." Between these factors, and the need to support a growing population on a diminishing supply of prime raw materials, it would seem that automation is a major source of hope for a stable and prosperous future.



Boeing Airplane Company

Thermal Problems of High-Speed Flight

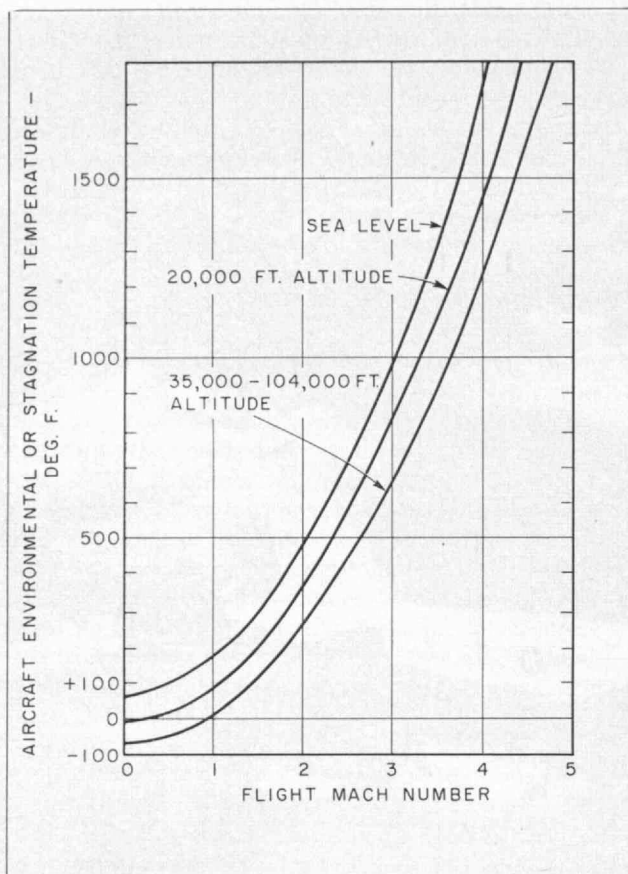
*New Materials Needed to Insulate and Dissipate
Heat Generated in High-Speed Aircraft*

By J. W. RIZIKA

PRIOR to and during World War II, it was generally acknowledged that the construction of aircraft capable of traveling at supersonic velocities represented the conquest of a major obstacle in aeronautical development. Now that aircraft have flown faster than the speed of sound and have broken through the "sonic barrier," an analogous situation has arisen with respect to the so-called "thermal barrier." This term is, perhaps, a misnomer for there is no clearly defined thermal barrier. Any such barrier is a function of the physical properties of the materials of which the aircraft is built, the heat generated within the aircraft and in its immediate environment, the temperature limitations of the instruments, equipment, and personnel within the aircraft, and any insulating and cooling mechanisms which may be available. There is no doubt, however, that one of the major problems connected with the continued

development of supersonic and hypersonic flight is that concerned with the dissipation of heat generated within, and in the immediate environment of, the craft. It is the purpose of this paper to point out some of the more reasonable solutions and future expectations.

In almost all discussions of this nature, it is customary to point out the "obvious" need of additional cooling as aircraft flight speeds increase. The arguments are usually based on data such as shown in Fig. 1. The environmental or stagnation temperatures of the aircraft increase approximately in proportion to the square of the aircraft Mach number, which is the ratio of the aircraft speed to the speed of sound at the ambient air temperature. Therefore, as the aircraft speed or Mach number increases, the environmental temperatures increase at a greater rate and larger quantities of heat are transferred into the air-



Drawings by M.I.T. Illustration Service

Fig. 1. As aircraft tend to travel at higher altitudes and higher speeds, the temperature of the craft increases markedly as shown above in this family of curves. Speed of aircraft is expressed in Mach numbers, rather than in miles per hour. The Mach number represents the ratio of speed of flight to velocity of sound propagation.

craft: this heat must be dissipated, and thus additional cooling is required. The use of this argument, as a basis for increased cooling requirements for aircraft flying less than four times the speed of sound,¹ is somewhat naive. If this were the only problem, a choice of proper insulation and aircraft materials could cause its rectification with relatively little difficulty. A full understanding of the thermal problems actually entails a comprehension of the basic aircraft-thermal requirements, heat sources, heat sinks, and heat pumps associated with high-speed flight.

Aircraft Thermal Requirements

Let us first consider the over-all aircraft system. As can be seen in Fig. 2, this is comprised of six primary component systems. The air frame or aerodynamic system consists of the fuselage, wings, tail, landing gears, and all other equipment necessary to fulfill the aerodynamic function of the aircraft. The propulsion system consists of the power plant and its accessories which are required to provide propulsive power for the aircraft. The auxiliary system consists of those subsystems which are necessary to provide electric

¹ It is expected that all operational aircraft that may be realized within the next 10-year period will have maximum Mach numbers less than four, for reasons independent of cooling considerations.

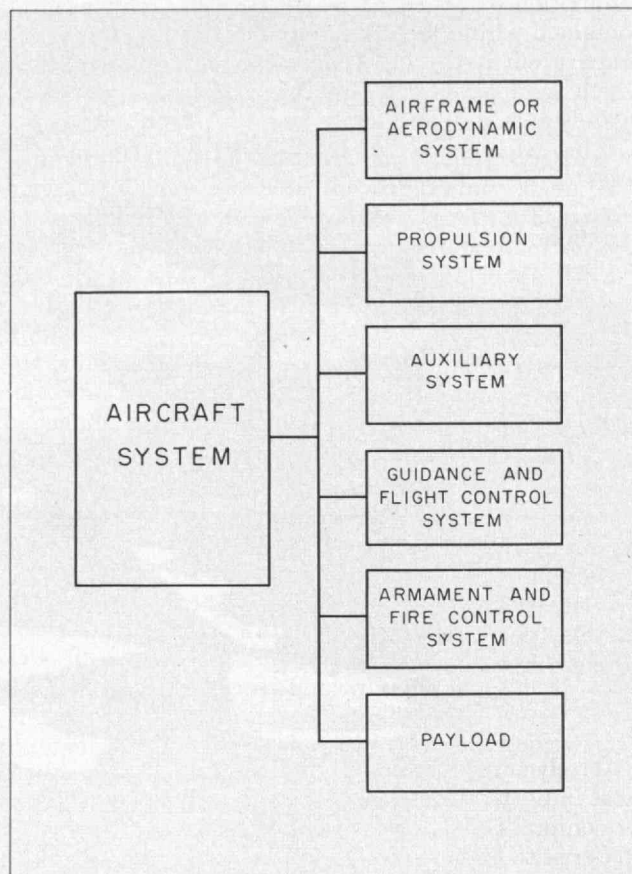


Fig. 2. Schematic representation of important elements in an over-all aircraft system. The aircraft system, shown at left, is composed of, and contains, six elements shown at right. Each primary component system has its own peculiar thermal problems which need to be considered separately in arriving at an evaluation of thermal problems of the craft.

and hydraulic power and environmental conditioning throughout the craft. The guidance and flight-control system consists of equipment such as radar, computers, and other instruments and controllers which are necessary to carry out the guiding and controlling functions of the aircraft. Defensive and offensive weapons, target sensors, and their controlling and computing elements comprise the armament and fire-control system. The pay load, of course, is comprised of personnel, supplies, and such other equipment whose ultimate delivery is the primary function of the over-all aircraft system.

The basic thermal requirements for aircraft are: (1) to prevent heat from accumulating within its temperature-sensitive areas; (2) to maintain these areas below their limiting temperature levels; and (3) to facilitate continuous high-efficiency performance of the over-all aircraft. All of the above-mentioned systems, or portions thereof, presently require varying degrees of cooling and/or insulation to enable the aircraft to travel at sustained supersonic speeds. The limiting temperature levels of the equipment within these systems may vary from 60 degrees F. to the much higher temperatures of structure-limitation, the actual temperature in the latter case, depending upon the particular equipment in question. All of the systems, except that of the air frame, also contain equipment which causes internal heat generation. If the

assumption is made that all of the other systems are contained within it,² the external heat sources have a primary effect on the air-frame system; if the heat which is generated by the external sources is adequately considered in the air-frame system, the effect will be secondary on the other systems. The advantages of insulating materials cannot be overemphasized when considering equipment which must be maintained at a relatively low temperature in order to operate efficiently and effectively.

Heat Sources

The heat sources may be separated into two independent categories — the external and internal heat sources. The external heat sources are those which are exterior to the aircraft system and are primarily those produced by the heat developed through aerodynamic action and that received through solar and nocturnal radiation. The internal heat sources are those which cause heat to be generated within the aircraft; electronic and radar equipment, mechanical and electrical equipment, and personnel are the major contributors of internal heat generation.

External Heat Sources

Aerodynamic heating is, by far, the largest and most important external heat source. It results from air compression (in a near-adiabatic process) which gives rise to a temperature increase in the air immediately surrounding the aircraft. In simpler terminology, it is the process by which the air in front of the craft is rapidly compressed by the "ram" action of the craft, itself. As shown in Fig. 1, the greater the

²This assumption is generally valid for all systems except the propulsion system, which will be considered separately later.

aircraft speed, the greater is the resulting environmental air compression or stagnation temperature. As the aircraft's environmental air temperature increases, heat is transferred from the air by convection and conduction to the aircraft skin or exterior surface, until thermal or temperature equilibrium is reached. The time rate of heat transfer to the aircraft surface can be determined from Newton's law of cooling, which states that the time rate of heat transfer is proportional to the area, the coefficient of heat transfer, and the temperature difference. For any given skin temperature, the rate of heat transfer to the aircraft increases roughly in proportion to the square of the flight Mach number; if the altitude is greater than 35,000 feet, the rate of heat transfer is also proportional to the square of the flight speed. In order to obtain an appreciation for the order of magnitudes of the heat generated through aerodynamic heating, for a Mach number of 2.0 at 30,000 feet altitude, the rate of aerodynamic heat transfer to the aircraft skin may be as high as 10,000 British thermal units per hour per square foot when the skin temperature is maintained at 120 degrees F. This is equivalent to 3.9 horsepower or 2.9 kilowatts of heat energy transferred to the aircraft for each equivalent square foot of exposed area. Altogether, this could represent well over 5,000 horsepower of heat energy transferred to an aircraft.

As mentioned earlier, the remaining external heat sources are the sun, planets, and other objects in space, which radiate heat to their surroundings. The maximum rate of heat transfer to the aircraft via solar and nocturnal radiation is less than 500 British thermal units per hour per square foot or less than 5 per cent of that due to aerodynamic heating. Thus, it is immediately seen that heat due to radiation is negligible in comparison to that of aerodynamic origin.

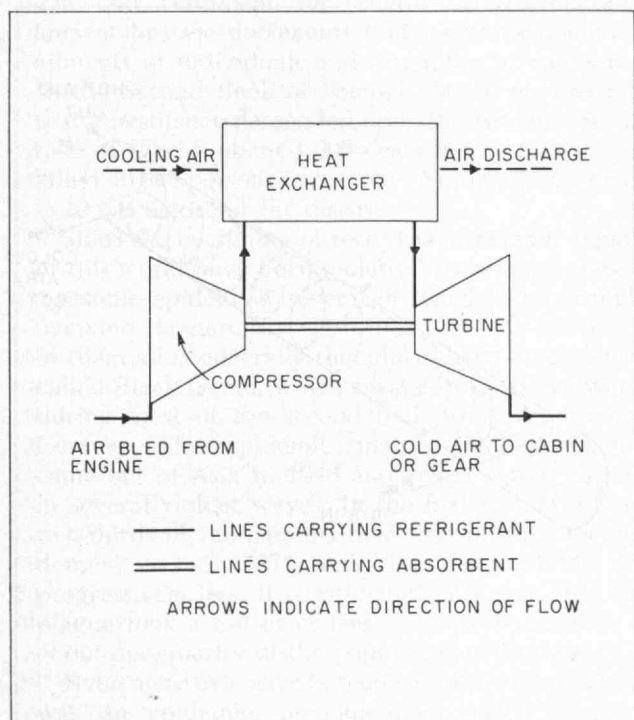


Fig. 3. Functional diagram of simple air-cycle heat pump, widely used in aircraft.

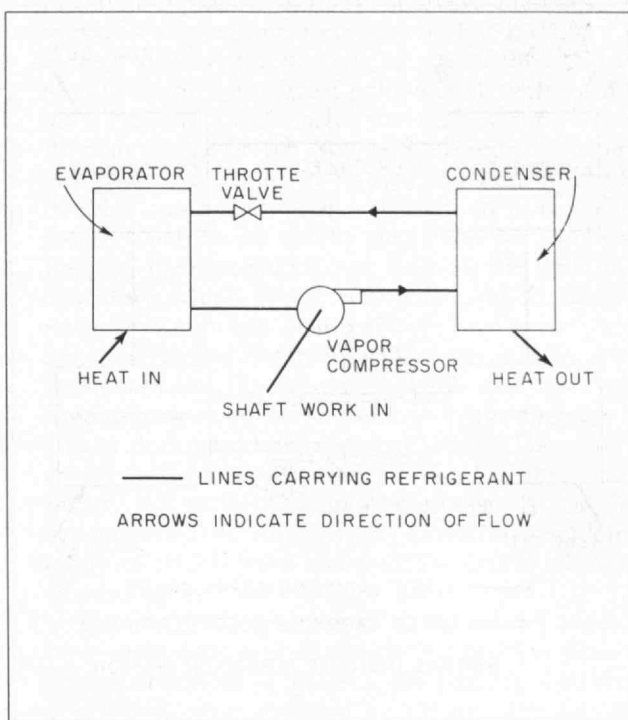


Fig. 4. Block diagram of vapor-cycle refrigerator used in many commercial aircraft.

Considering the large amount of surface area, it is obvious that aerodynamic heating would be the outstanding contributor of heat *if the aircraft skin temperature remained constant and relatively low*. Even without considering the very small efficiencies of possible heat pumps, it is immediately apparent that any mechanism to dissipate large quantities of heat would be so enormous as to result in large penalties in aircraft range and performance. Therefore, it is only natural that the major portion of the solution to the problem of external heat generation lay in the prevention of most of this heat being transferred into the craft and temperature-sensitive areas, and in allowing the skin temperature of the aircraft to approach the stagnation temperature. This can be accomplished by using insulating materials to separate those compartments (such as cabin and packaged electronic equipment) that require lower temperature levels than the rest of the aircraft. For the example cited above, the skin temperature would be slightly less than 400 degrees F. in order to have no aerodynamic heat transfer. Aluminum alloys may still be used at such temperatures, but there is no doubt that stainless steels and other high-temperature alloys will be necessary in the near future for aircraft operating at the higher Mach numbers.

Internal Heat Sources

As already mentioned, the internal heat sources are such items as electronics and radar equipment, mechanical and electrical equipment, and personnel. Most of these sources not only generate heat but also require specific environmental temperature ranges within which they will operate most efficiently and effectively. The quantity of heat generated by internal sources depends upon the amount of equipment

and personnel in the craft, but 100,000 to 400,000 British thermal units per hour is reasonable and a representative range of values. The environmental temperatures that must be maintained vary from about 50 degrees F. to the skin or stagnation temperature.

There are other items, such as ammunition and tires, which do not generate heat but must remain within specific environmental temperature ranges. Even if such equipment and personnel are compartmented and insulated from the rest of the aircraft, some heat is transferred into the compartments through the insulation. It is this heat, plus that generated within the compartments, that must be dissipated by means of a conditioning system.

The Propulsion System

The propulsion system could be classified as an internal heat source, with respect to the aircraft, except that the temperature-sensitive portions of the aircraft are usually insulated from heat which may be rejected by the engine.³ Certain portions of the propulsion system, however, must be cooled and/or protected from the heat generated within other portions of the propulsion system. The quantities of heat which are generated by the engine are of the order of millions of British thermal units per hour, but the temperature levels within the engine (700 to 1,500 degrees F.) are considerably higher than those which must be maintained in the temperature sensitive areas within the air frame. Therefore, the engine-cooling systems presently in use are usually quite

(Continued on page 428)

³ In this manner, the propulsion-system heat generation, with respect to the other air-frame systems, is treated as though it were in the category of an external heat source.

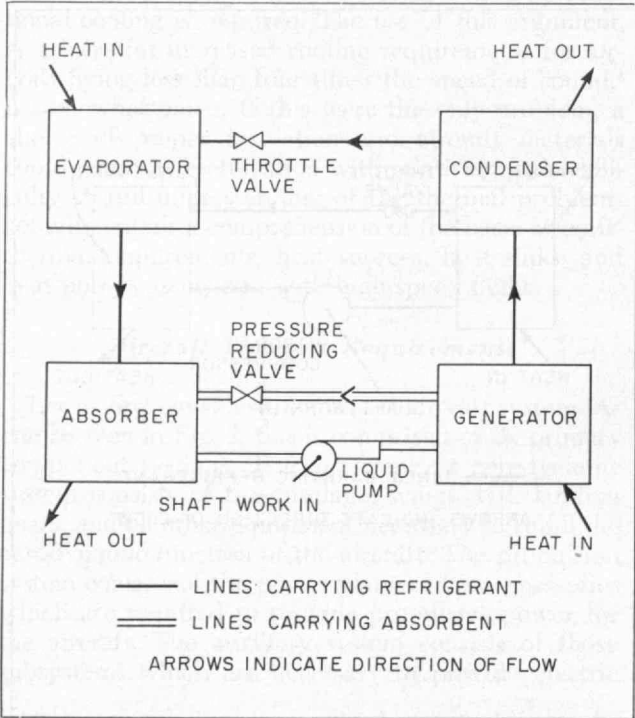


Fig. 5. Functional elements of an absorption-cycle heat pump having potential application.

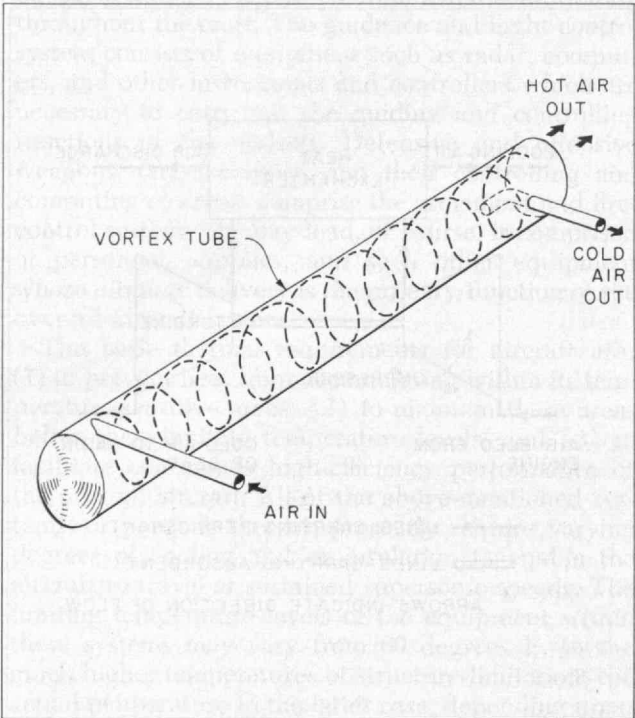


Fig. 6. Vortex tube in which spiraling air produces temperature differences at open end.

*Although Thucydides and Lucretius Have Provided
Accurate Accounts of It, Mystery Still Surrounds
the Nature of the*

First Great Epidemic of History

By JAMES A. TOBEY

DISEASE has been one of the afflictions of man since the beginning of time. Evidence to indicate, and perhaps prove, that this is so comes from investigations of the skeletal remains of prehistoric men and animals, from pathological studies of ancient Egyptian mummies, from references in venerable inscriptions and documents, and finally, from what we know today about the nature and ecology of disease itself. Bacteria, viruses, rickettsiae, and other microbes may have been unknown as such until after the middle of the Nineteenth Century, but pathogenic organisms undoubtedly have been the contemporaries of man since that distant day when he first evolved upon this troubled planet.

The human maladies of antiquity were both individual and communal. The earliest known representatives of *Homo sapiens* certainly suffered from headache, toothache, backache, arthritis; skin diseases, kidney stone and other troubles, insanity, and a host of other personal ills, including venereal disease. When man progressed from family and tribal organizations to villages and larger communities, he was often visited by epidemics of contagious diseases. The Old Testament, for example, is one of many ancient historic documents that mentions numerous ailments of individuals and a number of epidemics. In the Second Book of Samuel (24:15) we are told that a pestilence descended upon the Israelites in the time of David, about 1,000 years before Christ, and killed 70,000 persons in one day. No details are given as to the nature of the disease.

Since the beginning of recorded history the people of this world have been molested by a long series of awesome epidemics, several of which have brought mankind dangerously close to extinction. The worst of them all is generally thought to have been the so-called Black Death, which ravaged the known world during most of the second half of the Fourteenth Century. This epidemic, mainly bubonic plague, came out of Asia in 1348 and swept across Europe in several violent waves. In the first of these about two-thirds of the patients died, but in the later epidemics, in 1361, 1371, and 1382, the mortality was progressively less. It is estimated, however, that this plague took a toll of at least 25,000,000 persons, or about one-quarter of the population of Europe.

Even more extensive in scope than the Black Death was an epidemic, or pandemic, which occurred nearly 600 years later. This was the influenza outbreak of the Twentieth Century, which began in

Europe in May or June of 1918 and in three waves traveled literally throughout the world. Since the Fourteenth Century the known extent of the world had been augmented, of course, by the discovery of the two Americas, Australia, and other areas, and there had been a great increase in population. Although the influenza was, in general, not as deadly as the bubonic plague, it caused a particularly heavy mortality among certain susceptible races, such as those in the South Seas and the Arctic regions. It is probable, in fact, that the total carnage from this recent epidemic exceeded that of the Black Death.

During the past 3,000 years great plagues have harassed mankind in every century. Among the most noteworthy of these many epidemics have been the plagues of Athens and of Syracuse in the Fifth Century, B.C.; a horrible epidemic of anthrax among the Huns and their animals in the First Century, A.D.; St. Cyprian's epidemic, of a nature unknown but of terrible extent, in the Third Century; the plague of Justinian, undoubtedly bubonic plague, in the Sixth Century; the numerous epidemics of the Crusades, from the Eleventh to the Thirteenth Centuries, which included typhus, dysentery, leprosy, smallpox, and scurvy — the last not a contagious but a dietary deficiency disease; the dancing manias of the late Fourteenth Century; the great epidemic of syphilis in the late Fifteenth and early Sixteenth Centuries; the English Sweat of the Sixteenth Century; the great outbreak of smallpox in Mexico and Peru in the Sixteenth Century; the plague of London in the Seventeenth Century, so vividly described by Defoe and Pepys, which spread all over Europe; the typhus and dysentery which, along with the cold, ruined Napoleon's campaign in Russia; yellow fever in the Americas in the Eighteenth Century; measles which decimated the Fiji Islands in 1875; and the typhus fever which slaughtered millions in the Balkans and Russia during and after World War I. These are, of course, a mere fraction of the total. Every war in history, up to the time of World War II, has been accompanied or followed by disastrous epidemics, many of which have changed the course of human events.

The first great epidemic of history about which we have complete and accurate information was the plague of Athens of almost 2,400 years ago. Even before this plague occurred in 430 B.C., the historian, Herodotus, reported that a severe pestilence had devastated the Persian hosts under Xerxes in Thes-

sally in the year 480 B.C., but nothing is known about its nature.

The Fifth Century before Christ was the Golden Age of Greece. At the beginning of this period Athens had saved Hellas by defeating the Persians on land and sea, at Marathon (490 B.C.) and Salamis (480 B.C.). Under the later brilliant leadership of Pericles (490–429 B.C.) Athens had flourished and prospered. It was an important center of trade and commerce, with 300 ships sailing the seas from the port of Piraeus; it was a center of culture; it maintained a well-equipped army of 30,000 seasoned troops; it contained many magnificent buildings and some 10,000 smaller structures, but its statesmen had neglected to install sewers. The only rival of Athens in those days was Sparta, whose inhabitants sardonically referred to Athens as “the tyrant city.”

War, deftly promoted by Pericles, broke out between Athens on the one side and Sparta and her Peloponnesian allies on the other, in April of 431. It was fundamentally a trade war, but also one of prestige, and it lasted for 27 years, with an interval of uneasy peace for seven years, from 421 to 414. At the beginning of this conflict Athens was impregnable; when the war ended in 404 the great city of the Acropolis was ruined and her walls were pulled down.

In the second year of the war, in June of 430 B.C., the plague came to Athens. The normal population of the city, about 100,000, was then greatly increased by a flood of refugees from Attica, who had fled from the besieging Peloponnesian armies. These displaced persons were crowded into an insanitary environment, were poorly nourished, and were ideal subjects for the ravages of the disease. The pestilence was said to have come out of Ethiopia by way of Egypt, Libya, and Persia, where it had caused great havoc.

Present in the city at the time was the noted historian, Thucydides, a younger contemporary of Herodotus. Himself a sufferer from the pest and a witness of the sufferings of others, Thucydides wrote a detailed account of the epidemic, the first complete description of such a disaster. More than four centuries later the Roman philosophical poet, Lucretius, also wrote about this same epidemic in his *De Rerum Natura*, Book VI, but he borrowed extensively from Thucydides, sometimes translating verbatim from the Greek into Latin.

“A death-fraught miasm,” wrote Lucretius, as translated by H. A. J. Munro, “erst within the borders of Cecrops (i.e. Attica) defiled the whole land with dead, and dispeopled the streets, drained the town of burghers.” According to Thucydides, the period immediately preceding the onset of the epidemic had been one of general freedom from disease. Persons who had been in perfect health were suddenly seized with violent “heats in the head” and redness of the eyes, with inflammation of the throat and fetid breath, accompanied by hoarseness and coughing. Then followed severe intestinal upsets, with diarrhea and vomiting, which were “very distressing.” There was high fever, a livid color of the body, and the appearance upon it of reddish spots, which were raised and ulcered.

If the patient did not die by the end of the seventh to ninth day, as many did, convalescence was accom-

panied by necrosis of the fingers and toes, and sometimes the genitals. Loss of memory, delirium, and blindness were other sequelae. Those fortunate enough to recover were immune to second attacks and could nurse the sick without danger. Thucydides remarked that animals and birds of prey, such as vultures, dogs, and rats, shunned the bodies of the dead. He likewise stated that no human art was of any avail to cope with the epidemic. The doctors were stricken like the laity, and invocations to the gods brought no results. The poet, Sophocles, wrote an ode entitled, “When Pestilence Strikes,” asking the help of all the Greek deities, especially Apollo, the god of the healing art.

This epidemic is estimated to have killed about one-half of the population of Athens, as well as many beyond its walls. The situation became so serious that in August the Athenians made overtures to the Spartans for an armistice, a proposal which was promptly spurned by the Lacedaemonian king, Archidamus. The Peloponnesians found it expedient, however, to withdraw from the Attican peninsula in order to avoid the infection.

In the second year of the plague, 429 B.C., the epidemic claimed its most celebrated victim, Pericles himself. The 60-year old general already had lost two sons and a sister in the outbreak. The war was carried on by less able leaders, Cleon and Demosthenes; and later by Nicias and Alcibiades. It was this last who finally made the treaty of peace, an action which has been characterized as, “famous because it was so infamous.”

What was this mysterious plague, using the word “plague” in its general rather than its specific sense? This is a matter which has engendered much avid discussion and fervid speculation among modern medical authorities. Some assert that the epidemic was typhus fever, while others are convinced that it was bubonic or pneumonic plague. If it was typhus, the disease in Athens was unlike the typhus that we know today. Such a contingency is possible, since microbic diseases actually go through a process of alteration, variation, and mutation over the course of centuries. The plague of Athens might, moreover, have been some malady that no longer exists, one that has become extinct like the mastodon and the dinosaur.

An interesting theory as to the real nature of the plague of Athens was advanced by one of our leading epidemiologists, the late Dr. Hans Zinsser. While admitting the difficulty of making a sound diagnosis, he came to the conclusion that the epidemic was probably smallpox. This theory was postulated, in part at least, upon the type of eruption described by Thucydides, the raised and vesiculated pustules resembling those in smallpox, unlike the flatter red spots of typhus. The seasonal factor is also against typhus, since this louse-borne disease usually occurs in epidemic form in the winter rather than the summer. On the other hand, some authorities declare that smallpox did not exist in Europe at the time of the Athenian epidemic, although evidence points to its existence in China and India as long ago as 1,700 years before Christ. In favor of true plague, as disseminated by the rat flea, it has been pointed out that North Africa

(Concluded on page 426)

THE INSTITUTE GAZETTE

PREPARED IN COLLABORATION WITH THE TECHNOLOGY NEWS SERVICE

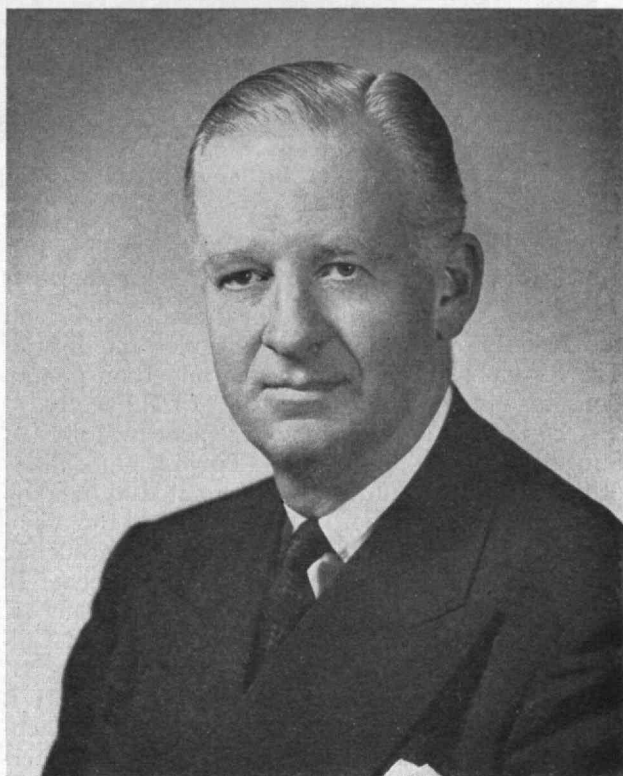
Alumni Ballot Choices

THIS spring, approximately 3,000 members of the M.I.T. Alumni Association took time out from their busy lives to vote for officers of the Association. Ballots were counted on April 25, and Theodore T. Miller, '22, was elected to serve as president of the Association for the year beginning July 1, 1956, succeeding Dwight C. Arnold, '27. Saxton W. Fletcher, '18, was elected vice-president for a two-year term, while David W. Skinner, '23, and Vincent T. Estabrook, '36, were both elected to serve as members of the Executive Committee for two-year terms, beginning July 1.

Alumni term members, elected to serve on the M.I.T. Corporation for the five years beginning next July 1, are: Augustus B. Kinzel, '21, Edward J. Hanley, '24, and Dwight C. Arnold, '27.

Three-year terms to serve on the National Nominating Committee went to: Cecil H. Green, '23 (District 8); Max L. Ilfeld, '24 (District 9); and Ralph B. Johnson, '27 (District 10).

The 13 Alumni elected to represent their classes on the Alumni Council for five years beginning July 1, 1956, are: Charles E. Fuller, '92, John P. Ilsley, '97, Lewis E. Moore, '02, George A. Crane, '07, John M. Pettingell, '12, Stanley C. Dunning, '17, Warren T. Ferguson, '22, Glenn D. Jackson, Jr., '27, Thomas E. Sears, Jr., '32, Philip H. Peters, '37, Louis Rosenblum, '42, James L. Phillips, '47, and Harold R. Lawrence, '52.



M.I.T. Photo

Theodore T. Miller, '22 . . .

becomes president of the M.I.T. Alumni Association for the year beginning July 1, 1956. Mr. Miller is president of the Polymer Chemicals Division of W. R. Grace and Company of New York.

Science and the Health of Mankind

FOUR major events will mark this year's Alumni Day, which will be held on the M.I.T. campus on Monday, June 11. In the morning, a conference on "Science and the Health of Mankind" will be held in the Kresge Auditorium. As usual, luncheon will be held in Du Pont Court at which time James R. Killian, Jr., '26, President, will give his annual report to Alumni, who will have opportunity to honor Vannevar Bush, '16. Visits to Technology laboratory facilities will be a feature of the afternoon. Sunset will bring a new kind of banquet, at the Rockwell Cage, where wives will join Alumni in a program devoid of formal addresses and featuring gifts and prizes.

Dr. Egon E. Kattwinkel, '23, Chief of Cardiology at the Newton-Wellesley Hospital, will be moderator at the morning conference. Those taking part in the conference will be: H. van Zile Hyde, Chief of the Division of International Health, U.S. Public Health Service; Gordon M. Fair, '16, Gordon McKay Professor of Sanitary Engineering, Harvard University; J. George Harrar, Deputy Director for Agriculture, Division of Natural Sciences and Agriculture, the

Rockefeller Foundation; Francis O. Schmitt, Institute Professor of Biology and former Head of the Institute's Department of Biology; and John G. Trump, '33, Professor of Electrical Engineering at M.I.T.

Dr. Bush, who is again back at the Institute, will be honored by the Alumni Association at the luncheon at which President Killian will summarize the Institute's changing fronts as an educational research institution.

M.I.T. laboratories concerned with the theme of the day's symposium will be manned and opened for inspection during the afternoon.

A social period, from 5:30 to 7:00 P.M. on the green adjacent to Rockwell Cage, will precede a *filet mignon* dinner in the Cage. The social period and banquet will provide ample opportunity to meet old acquaintances and make new ones. The ladies will join Alumni in this truly different annual banquet, where dress is informal and after-dinner speeches are absent. And, we have been told, the banquet "costs less, too!"

Faculty

Promotions

and

Appointments



M.I.T. Photos

M. B. Bever, '42



W. W. Buechner, '35



C. Collins



R. M. Fano, '41

As the school year draws to a close and plans are evolved for classes to be held this summer and the 1956-1957 school year, it is a pleasant duty of The Review to take cognizance of important promotions on, and appointments to, the M.I.T. Faculty.

According to a recent announcement by Julius A. Stratton, '23, Vice-president and Provost, 14 members of the Institute's staff have been promoted to the rank of full professor. As portrayed on this and the opposite page, the 14 reaching the top of the academic ladder this year as full professors are: Michael B. Bever, '42, Department of Metallurgy; William W. Buechner, '35, Department of Physics; Carvel Collins, Department of Humanities; Robert M. Fano, '41, Department of Electrical Engineering; Nicholas J. Grant, 2-44, Department of Metallurgy; Klaus Liepmann, Department of Humanities; Jack A. Obermeyer, '41, Department of Naval Architecture and Marine Engineering; Warren M. Rohsenow, Department of Mechanical Engineering; Irwin W. Sizer, Department of Biology; Victor P. Starr, '38, Department of Meteorology; Clark C. Stephenson, Department of Chemistry; J. Edward Vivian, '39, Department of Chemical Engineering; Gordon R. Williams, '29, Department of Civil and Sanitary Engineering; and Walter Wrigley, Department of Aeronautical Engineering.

The following 15 men have been promoted to the rank of associate professor: George H. Buchi, Department of Chemistry; Philip L. de Bruyn, '52, Department of Metallurgy; Peter Elias, 2-44, Department of Electrical Engineering; Morris Halle, Department of Modern Languages; Donald R. F. Harleman, '47, Department of Civil Engineering; K. Uno Ingard,

'50, Department of Physics; William D. Kingery, '48, Department of Metallurgy; Edward N. Lorenz, '43, Department of Meteorology; Osman K. Mawardi, Department of Electrical Engineering; Alan S. Michaels, 2-44, Department of Chemical Engineering; Robert B. Newman, '49, Department of Architecture; James B. Reswick, '43, Department of Mechanical Engineering; David P. Shoemaker, Department of Chemistry; Albert B. Van Rennes, 10-44, Department of Electrical Engineering; and Thomson M. Whitin, School of Industrial Management.

In addition to these promotions, Dr. Stratton announced that the 17 members of the M.I.T. staff who will join the Faculty as assistant professors, beginning July 1, are: Joseph R. Applegate, Department of Modern Languages; Robert R. Archer, '52, and J. Perry Barger, '50, both in the Department of Mechanical Engineering; Gene M. Brown, Department of Biology; Gordon L. Brownell, '50, Department of Chemical Engineering; David O. Caldwell, Harald A. Enge, and Marvin H. Friedman, all in the Department of Physics; Floyd E. Gillis, Jr., School of Industrial Management; Marvin E. Goody, '51, Department of Architecture; Peter Griffith, Department of Mechanical Engineering; Norman N. Holland, Jr., '47, Department of Humanities; Bruce Mazlish, Department of Humanities; Ronald E. Nece, Department of Civil and Sanitary Engineering; George S. Reichenbach, '52, Department of Mechanical Engineering; Frederick Sanders, '54, Department of Meteorology; and Abraham J. Siegel, Department of Economics and Social Science.

Nine members of the Institute's staff have been advanced to the rank of instructor, effective July 1.



M.I.T. Photos

V. P. Starr, '38



C. C. Stephenson



J. E. Vivian, '39



G. R. Williams, '29



W. Wrigley



M.I.T. Photos

N. J. Grant, 2-44

K. Liepmann

J. A. Obermeyer, '41

W. M. Rohsenow

I. W. Sizer

This list includes: Krishin H. Bhavnani, '51, Paul R. Johannessen, '52, James F. Kaiser, '54, Amiya K. Sen, and David R. Whitehouse, '54, all in the Department of Electrical Engineering; Oma V. Hamara, William B. Houston, Jr., and Redmond R. O'Brien, '53, all in the Department of Mathematics; and Lewis N. Lukens, 3d, Department of Biology.

In addition to these promotions, the following appointments to full professorships have been announced to take effect on July 1: Jule G. Charney, Department of Meteorology, and Clifford G. Shull, Department of Physics. Robin Boyd becomes visiting professor in the Department of Architecture.

Newly appointed associate professors include: William S. Bottiglia, Department of Modern Languages; Ewan W. Fletcher, Department of Electrical Engineering; and Marvin E. Shaw, School of Industrial Management. Francis E. Low will become visiting associate professor of physics, effective July 1.

Assistant professors whose appointments take effect on July 1 are: Richard Doel, William H. Pinson, Jr., '52, and John W. Winchester — all in the Department of Geology; Hartley Rogers, Jr. and Isadore M. Singer — both in the Department of Mathematics; and Edgar H. Schein, School of Industrial Management. Robert A. Clark, 2-46, has been appointed visiting assistant professor in the Department of Mathematics, effective September 15.

Commencement and Baccalaureate

NEIL H. McELROY, President of the Procter and Gamble Company and distinguished public leader in education, will deliver the principal address at the graduation exercises of the Class of 1956 at M.I.T. on Friday, June 8. John E. Burchard, '23, Dean of M.I.T.'s School of Humanities and Social Studies, will deliver the baccalaureate on Thursday afternoon, June 7.

Commencement activities for the Class of 1956 will begin on Friday, June 1, when the entire class joins in the Senior Banquet. For the next five days through Tuesday, June 5, the Senior Week Committee has planned a series of social events including a moonlight cruise, a Boston "Pops" Orchestra concert, and the formal Senior Ball.

Following the principal address at the graduation exercises by Mr. McElroy, James R. Killian, Jr., '26, President of the Institute, will address members of the graduating class. The exercises will begin at 10:30 A.M. in the Rockwell Cage at M.I.T. The graduation

exercises will be followed by the commencement luncheon and the president's reception for members of the graduating class and their guests in Du Pont Court at M.I.T.

Mr. McElroy, who in 1955 was chairman of the White House Conference on Education, has devoted himself to a wide range of national and local civic activities. He is a trustee of the National Fund for Medical Education, a director of the Council for Financial Aid to Education, vice-chairman of the National Industrial Conference Board, and vice-chairman of the United Community Campaigns of America.

A graduate of Harvard College (A.B. 1925), Mr. McElroy joined the Advertising Department of Procter and Gamble in 1925. He was elected president of the company in 1948, after holding the positions of Promotion Department manager, advertising and promotion manager, and director and vice-president in charge of advertising.

Born in Marshall, Minn., Dean Burchard attended the College of Liberal Arts of the University of Minnesota and is a graduate of M.I.T. in Course IV — Architecture (B.S. 1923; M.S. 1925). After completing graduate study at M.I.T., Dean Burchard joined the staff of Bemis Industries, Inc., where he became internationally known for his work in housing. In 1938 he returned to the Institute as professor and director of the Albert Farwell Bemis Foundation.

From 1940 to 1945 Dean Burchard was on leave of absence from the Institute for important war work. He returned to M.I.T. in 1945 to become director of libraries and was appointed dean of humanities in 1948 and dean of the School of Humanities and Social Studies in 1950.

Safety Conference

MORE than 100 specialists in safety from throughout the United States, many of them members of college and university staffs, gathered in the Kresge Auditorium on April 30 for the Third National Conference on Campus Safety. The three-day program, organized jointly by the Institute and the National Safety Council, covered many of the safety problems which arise on college campuses.

Typical of the wide range of topics discussed were fire prevention, architectural design as related to safety, the student car problem, safeguards in handling radioactive materials, disposal of other laboratory wastes, safe handling of gases, and the safety implications of intramural athletic programs.

Class Reunions in 1956

<i>Class</i>	<i>Date</i>	<i>Place</i>	<i>Reunion Chairman or Class Secretary</i>
1891	June 9	Brookline Country Club, Brookline	Harry H. Young, 290 Main Street, Cambridge
1896	June 11	Du Pont Court, M.I.T., Cambridge	John A. Rockwell, 24 Garden Street, Cambridge
1900	June 12-14	The Pines, Cotuit	Elbert G. Allen, 11 Richfield Road, West Newton 65
1901	June 8-10	Castle Hill, Ipswich	Willard W. Dow, 78 Elm Street, Cohasset
1905	June 22 or 29	Wianno Club, Osterville	Fred W. Goldthwait, 274 Franklin St., Boston
1906	June 8-11	50th Reunion Snow Inn, Harwichport	James W. Kidder, 215 Crosby Street, Arlington 74
1908	June 8-10	Melrose Inn, Harwichport	H. Leston Carter, 14 Roslyn Road, Waban 68
1911	June 8-10	Snow Inn, Harwichport	Orville B. Denison, Framingham Chamber of Commerce, 109 Concord Street, Framingham
1913	June 8-11	New Coonamessett Inn, Falmouth	Frederick D. Murdock, 88 Rumstick Road, Barrington, R.I.
1916	June 8-10	Oyster Harbors Club, Osterville	Ralph A. Fletcher, Box 71, West Chelmsford
1921	June 8-10	Sheldon House, Pine Orchard, Conn.	Melvin R. Jenney, 9 Meadowview Road, Melrose 76
1926	June 8-10	Treadway Inn, Coonamessett, N. Falmouth	Cedric Valentine, 18 Heath's Bridge Road, Concord
1931	June 8-10	25th Reunion Baker House, M.I.T., Cambridge	Charles W. Turner, 65 Exchange Street, Lynn
1936	June 8-10	New Ocean House, Swampscott	Anton E. Hittl, 193 Bedford Road, Pleasantville, N.Y.
1941	June 8-10	Mayflower Hotel, Shore Club, Plymouth	Edward R. Marden, 233 Harvard Street, Brookline 46
1946	June 8-10	Curtis Hotel, Lenox	Stuart Edgerly, Jr., 38 College Road, Wellesley 81
1951	June 9, 10	Mayflower Hotel, Plymouth	Charles H. Spaulding, 9 Belfry Terrace, Lexington 73

Swimming Instruction

ALPHA Phi Omega is a national college fraternity whose members are former Boy Scouts and whose purpose is to promote service to the campus, to the community, and to the nation. At M.I.T., Alpha Phi Omega is represented by Alpha Chi Chapter. This year Alpha Chi Chapter has for the second time conducted swim classes for Cambridge Boy Scouts as part of its service program. One hundred and sixty boys from middle- or lower-class families are given an opportunity to learn to swim that otherwise would not be available. In addition, they have the opportunity to pass the Boy Scout swimming tests.

The first such project was held last year after considerable discussion within Alpha Chi Chapter as to its feasibility, and after numerous visits to officials of M.I.T. to procure Institute sanction and the use of the Alumni Pool. At the beginning of the present school year a committee was formed to report on the success or failure of that first program and to evaluate the need for a similar project this year. They reported that the first classes had been a success and recommended that another series be held. Two months of planning followed, and the result was an eight weeks' course conducted in the spring of 1956.

Three one-hour classes are held each Saturday night throughout the course, including: one for non-swimmers; one for swimmers; and one for lifesavers. The boys pay a fee of \$2.00 for the entire course, which covers the cost of overtime for pool attendants and laundry charges on bathing suits. No profit is made by Alpha Chi. The boys are not charged for a medical examination given by the Homberg Infirmary before the course begins. The program requires the services of 13 instructors and five additional men to help enforce strict no-horseplay rules — both in the locker room and in the pool. These men, numbering about one half of the total membership of the Chapter, thus give up eight Saturday nights for this project.

Of 28 Boy Scout Troops in Cambridge, 16 have from 2 to 38 boys in the course. It is estimated that about one half of the boys in the first course returned for the second. This year about 50 boys passed First Class swimming requirements, 44 were awarded the Swimming Merit Badge, and 13 were awarded the Life Saving Merit Badge. It is believed that this project is worth while and that it has been a success in every way. The project is not intended to become an annual affair, but instead must be re-evaluated each year in terms of the needs of Cambridge Boy Scouts and the time limitations on M.I.T. students.

Meteorology—Science, Not Art

THE Department of Meteorology was host to its Visiting Committee at a meeting at the Institute on April 16, 1955. Members of the Committee present at this meeting were: Arthur F. Merewether, Harlow Shapley, David B. Smith, '33, Clarke Williams, and Alfred T. Glassett, '20, chairman.* Also present at the meeting were: James R. Killian, Jr., '26, President; Julius A. Stratton, '23, Vice-president and Provost; and Robert M. Kimball, '33, Secretary—all of the Institute's Administration, as well as members of the Faculty of Course XIX.

Professor Henry G. Houghton, '27, Head of the Department of Meteorology, outlined the development by the Department of the use of radar as a new tool for taking observations and the co-operative work with the Lincoln Project on this radar activity. Discussion brought out the fact that at M.I.T. Meteorology is not an art but a science to develop not only forecasters but experts in the field of air movement and its impact on the environment and civilization. Members of the Committee were greatly impressed by the scope of activities of the Department's personnel and their fields of research activity.

The discussions brought out the fact that the major opportunities for research and employment for the graduates are dominated by various United States government departments. Attempts have been made to obtain private funds for research but so far they have been unsuccessful. It appeared to be the consensus that the openings for Department graduates holding advanced degrees can well spread throughout American industry but that under present conditions, the research field will probably be largely dominated by government funds.

Professor Houghton provided some historical background of the Department of Meteorology by recalling that it had started as a graduate school, but initiated an undergraduate course leading to a bachelor's degree after developing special courses for the Armed Forces during World War II. Positions open for graduates with a bachelor's degree in meteorology were limited to the United States Weather Bureau. Probably as a result of this condition, a small number of students take the undergraduate course. The graduate course in meteorology, however, is in a very healthy state, especially since courses in physics, electrical engineering, and general engineering provide suitable undergraduate preparation for advanced work in meteorology.

The Committee recommends to the Corporation that the Department of Meteorology discontinue awarding the bachelor's degree, and provide only graduate instruction. Faculty members, and members of the Visiting Committee concurred.

The report of the Visiting Committee was presented to the M.I.T. Corporation on October 3, 1955, to the Executive Committee on October 21, and was received by The Review on November 8, 1955.

* Members of this Committee for 1954-1955 were: Alfred T. Glassett, '20, chairman, Clarke Williams, '24, Arthur F. Merewether, '25, John J. Desmond, Jr., Thomas S. Moorman, Jr., F. W. Reichelderfer, Harlow Shapley, David B. Smith, '33, and Don M. Yates.

Student Housing

A STUDY of student housing at M.I.T. was the major topic of discussion at the 317th meeting of the Alumni Council, held at the Faculty Club on Monday, April 30, at which Dwight C. Arnold, '27, was presiding officer.

First order of business was the report of the annual election of officers of the Alumni Association, as given on page 409. Between March 15 and April 30, 1956, nine members of the M.I.T. staff had visited 10 alumni clubs, including those in Tokyo, Toronto, and Montreal. Also announced was the nomination, by the Executive Committee, of: Avery H. Stanton, '25, for a five-year term on the Alumni Fund Board; Alf K. Berle, '27, for a three-year term on the Alumni Fund Board (to replace Theodore T. Miller, '22, who, as President of the Alumni Association becomes ex officio member of the Board on June 30, 1956); and J. Peter Andersen, staff, as a new member of the Committee on the Alumni Day Conference. The Council voted to elect these nominees.

As chairman of the Alumni Fund Board, Mr. Miller reported that 9,568 Alumni had contributed \$430,000 to the 1956 Alumni Fund as of April 30. Of this amount, \$50,000 has been designated for scholarships, and \$9,000 for the Institute's support in the medical sciences. The present number of contributors represents 28 per cent of the active Alumni; 71 per cent of the members of the Alumni Council have contributed to the Alumni Fund.

As chairman of the Dinner Committee for Alumni Day, Oscar H. Horovitz, '22, reported plans for the evening banquet in Rockwell Cage, and David W. Skinner, '23, chairman of the Committee on Gifts and Prizes, reported that the evening events would "be built around these gifts and prizes." Additional information on Alumni Day, 1956, appears on page 409 of this issue.

Gardner S. Gould, '07, presented a resolution on Alexander Macomber, '07, which was accepted by a rising, silent vote of the Council members.

Comments and reports on student housing at the Institute were given to members of the Alumni Council by members of a Committee on Student Housing, appointed in May, 1955, by James R. Killian, Jr., '26, President. As members of this Committee, John T. Rule, '21, Laurens Troost, Arthur A. Wasserman, '51, and Edwin D. Ryer, '20, chairman, reported on the accomplishments of the committee for the past year.

President Killian had asked the committee to examine such matters as the kind of dormitory unit which would best meet the Institute's educational objectives, considering such factors as size of housing units, the desirability of incorporating dining and community recreational facilities within each housing unit, and the role of the Faculty Resident in the dormitory system. In addition, President Killian asked the committee to review: (1) the proposals that East Campus be developed into a Graduate Center or alternatively a Freshman Center; (2) the desirability of a Student Union; and (3) the needs for the housing of married students.

Mr. Ryer, chairman of the Committee and past president of the Alumni Association, reported on his

committee's activities of the past year. There was not sufficient time to report on reasons underlying the committee's recommendations. Mr. Ryer did report, however, that the committee had reached the following general conclusions:

1. The continuing development of a residential system, with the furtherance of the education of students as its primary function, is a sound and proper objective for the Massachusetts Institute of Technology. This development must contemplate the accommodation of a larger student body, at least in the graduate years.

2. The best progress in the development of such a residential system will be made if each housing unit is complete and self-contained in facilities for sleeping, dining, social contact, and study.

3. The fullest realization of the educational potentialities of a residential system will be secured as active participation by the Faculty is facilitated and as responsibility is assumed by, and authority is delegated to, students for the management of their own residential lives and the maintenance of good living and study conditions.

4. The ideal pattern for the future development of the Institute's residential system will place all undergraduate residences together with an adequate Student Center on the campus west of Massachusetts Avenue, and will incorporate a Graduate Center east of the main educational buildings. It will include facilities for married students off campus and possibly on a co-operative basis with other educational institutions.

The fraternities are an important constituent in the residential system of the Institute and contribute valuably to the life of the community. The ideal residential pattern will therefore include continued co-operation with fraternity chapters desiring to move to the campus.

Mr. Ryer then called upon Professor Rule to discuss in detail the recommendations for altering the existing dormitories in order to provide space for dining and lounging facilities as well as housing for Faculty Residents. Briefly, these call for remodeling present dormitory units, wherever possible, to house not more than 200 students, for a Faculty Resident for each unit of 200 students, and for dining and social provisions for each unit, in addition to individual study and sleeping quarters. To put the committee's program into effect will require extensive changes in the Graduate House, Burton House, Baker House, and the dormitories on the East Campus. To make space for dining and social rooms as well as for Faculty residences, accommodations for about 350 students will be eliminated, and this in turn requires construction of two new dormitory units housing about 200 students each. Tentative estimate is that remodeling and new construction recommended by the committee would cost about \$4,500,000. A proposed Student Union, on Massachusetts Avenue, opposite M.I.T. would probably cost \$3,000,000 although this estimate is still subject to substantial change. Thus improved housing for essentially the present number of students, and a Student Union and shopping center to replace the Tech Block, will require building expenditures of about \$7,500,000.

As a young Alumnus, who could interpret the committee's proposals in terms of their meaning to Technology students, Mr. Wasserman spoke on the importance of student government, and outlined the influence which a college residential system has on the general education of its students.

Finally, Professor Troost, Head of the Department of Naval Architecture, and Faculty Resident at Burton House, spoke on the Faculty's responsibility in furthering the nonacademic portion of the Institute's educational program.

The report on student housing was essentially the same as that presented to members of the M.I.T. Corporation, Faculty, and student body at a convocation held in Kresge Auditorium on March 5.

Medical Staff Appointments

THE appointments of a Boston psychiatrist and a Rhode Island physician, both graduates of Harvard College and Harvard Medical School, to the Institute's medical staff were announced early in May by Dr. James M. Faulkner, Medical Director at M.I.T.

Dr. Samuel D. Clark, who will join the M.I.T. staff in September, 1956, has been a physician in Bristol, R. I., since 1939. In addition to his private practice, he has been Bristol health officer and has held several high offices in the town, including the presidency of the Town Council.

Dr. Lemoyne White, who will come to M.I.T. in July, is associate psychiatrist at the Massachusetts General Hospital and instructor in psychiatry at Harvard Medical School. He will succeed Dr. Herbert I. Harris, M.I.T. staff psychiatrist who will remain with the Institute in a part-time capacity.

In announcing the two new appointments, Dr. Faulkner said:

It is a pleasure to announce the addition of two such able men to the full-time staff of the M.I.T. Medical Department. Dr. White will be in charge of our psychiatric section. He will continue with Dr. Harris the section's work in relating psychiatry to the educational process and to the counseling of students. Dr. Clark is not only a first-rate physician with a broad experience in general practice, but also has had an active career in community affairs. Professionally and personally he is ideally attuned to the needs of an academic community.

Dr. Clark received his A.M. degree from Harvard College in 1931 and his M.D. degree from Harvard Medical School in 1935. He practiced in Hartford and Providence before settling in Bristol. During World War II he served with the Army Medical Corps. This year he has been president of the Rhode Island chapter of the American Academy of General Practitioners and president of the Bristol District Nursing Association. He is a past president of the Bristol County Medical Society, the Bristol World Affairs Council, and the Bristol Y.M.C.A.

Dr. White received his A.B. and M.D. degrees from Harvard College and Harvard Medical School in 1936 and 1940, respectively. During World War II he served as a flight surgeon with the Army Air Transport Command. Since then, in addition to his staff work with the Massachusetts General Hospital and the Harvard Medical School, he has also been associated with the Boston Psychopathic Hospital, the Harvard School of Public Health, and the Massachusetts Eye and Ear Infirmary. He took his psychoanalytic training at the Boston Psychoanalytic Institute and has had a private practice in psychiatry.

Review of Metallurgy

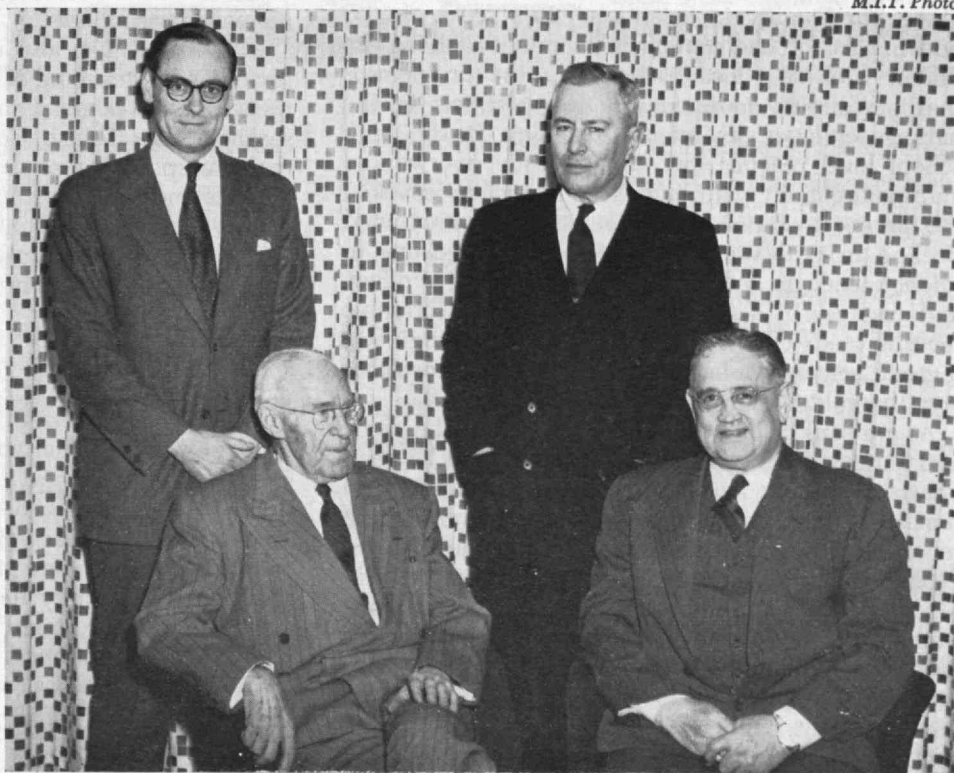
THE Given Room, in the Sloan Metals Processing Laboratory, was the scene of the March 14, 1955, meeting of the Visiting Committee on the Department of Metallurgy. Meeting with the members of the Committee* were Professor John Chipman, Head of the Department of Metallurgy, and 23 members of the Department. In the absence of Edwin D. Ryer, '20, chairman, Howard H. McClintic, Jr., '19, presided. Dr. Chipman introduced the younger assistant professors who each gave 10-minute talks on work they were performing at the graduate and undergraduate level. The subjects covered demonstrated that the research was fundamental and that the results should be beneficial to industry.

After lunch, general discussions took place regarding the Metallurgy Course at the Institute, as to its standing with other engineering courses and with similar courses in other institutions. The lack of interest in the Course at the undergraduate level was emphasized, and it was pointed out that a similar situation was being experienced at other colleges offering this course. The enrollment of undergraduate students appears to have leveled off to about 15 Freshmen, 21 Sophomores, 28 Juniors, and 25 Seniors. There are 116 graduate students. This is the situation despite the fact that the starting wage for graduate engineers in metallurgy is about 10 per cent higher than in other branches and that the demand is about five times the number graduated each year.

Inasmuch as the present staff, space, and equipment could handle more undergraduates in metal-

* Members of this Committee for 1954-1955 were: Edwin D. Ryer, '20, chairman, Irving W. Wilson, '11, C. Baldwin Sawyer, '17, Howard H. McClintic, Jr., '19, Edwin D. Martin, '22, Walter Crafts, '26, Edgar C. Bain, Charles R. Cox, Isaac Harter, and Kenneth D. Mann.

Five Technology Alumni—four of whom are shown here—played varied roles when the first Minta Martin lecture in aeronautical engineering was given at M.I.T. on March 22. The lecture, established by Glenn L. Martin in memory of his mother, was given by William R. Hawthorne, '39 (standing left), Hunsaker Professor of Aeronautical Engineering. This professorship is named after Jerome C. Hunsaker, '12, Professor of Aeronautical Engineering, Emeritus (not shown in photograph), who founded the Course in Aeronautical Engineering at M.I.T. Lester D. Gardner, '98, founder of the Institute of the Aeronautical Sciences, is seated at left. At right are S. Paul Johnston, '21, Director of the Institute of the Aeronautical Sciences (standing), and C. Stark Draper, '26, Head of the M.I.T. Department of Aeronautical Engineering.



M.I.T. Photo

lurgy efficiently, it was felt that continuing efforts should be made to interest undergraduate students so that the Institute could better fulfill the demands for metallurgical engineers as well as support the very fine post-graduate activity. It was questioned as to whether the name of the Course, "Metallurgy," might be detrimental and suggested that possibly a change in name to "Metallurgical Engineering" or "Metals and Metals Engineering" or some other suitable name might be of value. It was further suggested that some of the required courses such as Quantitative Analysis, Physical Chemistry, Inorganic and Organic Chemistry, and Metal Thermodynamics appeared sufficiently awe-inspiring to the undergraduates so that the course was avoided. Possibly some modification of the curriculum as it applies to these courses might be helpful, assuming, of course, that it could be accomplished without detriment to the over-all Course in Metallurgy. These matters may appear somewhat trivial, but they seem to be important in the minds of prospective students and affect their attitude toward the study of metallurgy.

It was agreed that the importance of metallurgy is not recognized by many teachers of science in secondary schools and that this fact has a definite bearing on the present enrollment situation. The staff of the Department at M.I.T. have consistently tried to interest prospective students but so far no great interest has developed.

The Committee feels that the staff are doing an excellent job in the undergraduate, graduate, and research fields, and thanked Dr. Chipman and his staff for their co-operation and great interest.

The report of the Committee was received for publication in *The Review* on November 8. It was reviewed by the M.I.T. Corporation on October 3, and by the Institute's Executive Committee on December 15, 1955.

Decade of Nuclear Science

ON April 14, the Laboratory for Nuclear Science celebrated its 10th anniversary quietly with an open house at M.I.T. and a birthday banquet and dance at the Hotel Bradford in Boston for the families of its 200 scientists and other personnel. It was a modest affair for a group that daily works at the frontiers of knowledge. It was in this Laboratory, for example, that positronium was first discovered experimentally. Positronium is a short-lived atom built of a positive and a negative electron. It does not exist for more than one ten-millionth of a second.

The M.I.T. Laboratory for Nuclear Science was one of a handful established after World War II to explore new phases of nuclear physics. In these explorations the picture of the nucleus has changed considerably from the one that dominated the early part of the century. In the words of Professor Jerrold R. Zacharias, Director of the Laboratory:

Instead of a tidy little world of protons, neutrons, and electrons, scientists are now confronted with a much more complex system. Research workers in all parts of the world have discovered nearly two-dozen "elementary" particles to which they have given names like pions, mu-meson, and hyperon. Experimental data on the "new nucleus" are far from complete . . . accumulating faster than they can be analyzed. Partly as a consequence, current theoretical models of the nucleus are at best tentative and sometimes contradictory.

The nuclear program at M.I.T. is a broad experimental and theoretical attack on these new problems. It is completely fundamental and nonsecret.

M.I.T. and Life

IN its May 7 issue, *Life* magazine calls attention to the serious shortage of technically trained personnel in the United States. Under the title, "A Quest for Quality in Scientists," *Life* seeks also to find means for overcoming what might well be the dilemma of the decade. Basically the problem is that of training more and better scientists in the nation's colleges, as science teaching at the high school level reaches low ebb. Already overworked and inadequately paid, high school teachers envision the prospect of still larger classes and a continued decline in real wages, while industry beckons to science teachers and professors with lucrative offers, and engages in a feverish, indiscriminate scramble for this year's crop of college graduates in engineering and science. A better way to kill the goose that lays the golden eggs would be hard to find.

As a means of informing its readers with the scope and nature of the problem, *Life* felt that "M.I.T. emphasizes training better — not more — students" and sent photographer Gjon Mili, '27, to Cambridge to record current events at the campus on the Charles. Probably many another Alumnus will find, as did Mr. Mili, that the Institute is quite a different place from what it was in his student days. Of many hundreds of photographs Mr. Mili made during his extended visit to the Institute in February, *Life* presents eight pages of halftones, depicting varied and miscellaneous phases of student life at M.I.T.

In reporting on Technology's aim to supply its share of technically trained personnel, *Life* says:

"Trying to meet this new need, M.I.T. is now engaged in the greatest changes of its 95-year history. To meet the need for more scientists, Tech has taken in almost twice the students it had 15 years ago. An undergraduate . . . is taking courses which are both more complex and more meaningfully related to the whole sweep of modern science. Most significant of all, he finds himself subjected to a new emphasis on the humanities, for the scientist and engineer today is being pushed into a totally unfamiliar area of responsibility, forced to help make the gravest kind of political, social and military decisions."

In addition to its somewhat dramatized eight-page pictorial coverage of Technology students at work and at play, *Life* features an article, "A Bold Strategy to Beat Shortage." In this, James R. Killian, Jr., '26, President, proposes a four-point plan for training greater numbers of scientists more effectively.

"First," says Dr. Killian, "the nation should establish several thousand more scholarships to help gifted but needy high school graduates go to college. I would prefer this increase to be financed by private funds, as, for example, through a concerted effort by foundations and corporations. But if private funds cannot be marshaled in adequate amount, then I urge a short-term (five-year) federally financed program."

The immediate establishment of "about 9,000 competitive, annually awarded, four-year federal scholarships" is urged in this article. Of this number, it is proposed that 3,000 would be earmarked for high school students who wish to follow science or engineering. President Killian would also like to "encourage more able women to major in science and mathematics, particularly women who are willing then to become science or mathematics teachers in secondary schools."

President Killian also urges "a concerted effort to revitalize the teaching of science and mathematics in the secondary schools" and "a national forum like the recent White House Conference on Education to throw a spotlight on ways whereby the nation can educate more and better scientists and engineers." Finally, President Killian suggests that "we formulate the outlines of a grand strategy for maintaining our technological advance in the U. S."

Student Activity

GATHERING at the M.I.T. Faculty Club on March 7, 1955, members of the Visiting Committee on Student Activity* met with James R. Killian, Jr., '26, President, and Edward L. Cochrane, '20, Vice-president for Industrial and Governmental Relations, to discuss various phases of student living at the Institute. Also present were other members of the Administration and Faculty mentioned below.

E. Francis Bowditch, Dean of Students, introduced
(Continued on page 418)

* Members of this Committee for 1954-1955 were: David A. Shepard, '26, chairman, William L. Stewart, Jr., '23, Theodore P. Ferris, Horace S. Ford, and J. Willard Hayden (deceased).

BUSINESS IN MOTION

To our Colleagues in American Business ...

Improve quality, reduce production costs — either or both. That is the aim of Revere in its relations with customers and prospects. Here is an example that is rather spectacular. It involves overlaying a silicon bronze gasket surface $2\frac{1}{2}$ " wide around the periphery of a 46-inch diameter, $2\frac{1}{2}$ " thick steel tube sheet for a large heat exchanger.

During a call on the manufacturer Revere was given the opportunity to see the overlaying operation. It was being done manually, by the gas-shielded tungsten arc method. Experience showed that the time required to complete the operation was from $6\frac{1}{2}$ to 7 hours. Included in the material cost was a full tank of argon, price about \$26.40. After the gasket surface was completed, it was machined, which sometimes revealed excessive iron pickup, caused by differences in welding speed or other operator variants. Sometimes there would be porosity, sometimes excessive hardness. Repairing these spots by re-welding meant that the surface had to be machined again.

The company in question is highly skilled, and seldom needs to call in people from outside. However, this difficult operation was of considerable concern because of the size of the contract and the extra costs involved. Revere was asked for its opinion. After studying the matter, it was suggested that the gasket surface could be done more quickly and uniformly by semi-automatic methods, using equipment already

available in the shop. The necessary strict details of procedure were developed in the Welding Section of Revere's Research and Development Laboratory at Rome, N. Y. so that we were able to prove the method. The customer's shop was then revisited and assistance given in setting up the equipment, which included a variable-speed welding positioner to rotate the tube sheet under a stationary head. On the first sheet overlaid by this gas-shielded metal arc process, the time required was 49 minutes.

Time thus was reduced by some six hours. Argon consumption was cut to about 25 cubic feet at a cost of about \$3, representing a saving of about \$23 in gas alone. Cost estimates of the two processes indicated a total saving of about \$50 per tube sheet. Since the manufacturer still had over one hundred of these heat exchangers to make before the contract was completed, total savings will amount

to about \$5,000, as a result of the better method.

It is interesting to note that no Revere materials were involved in this work. Nevertheless, Revere was glad to do it for an important customer, one who buys large quantities of our metals.

In these days it is more important than ever to hold costs down. Perhaps your suppliers have some special skills that you could use. No matter what you make, it would be wise to seek their collaboration on the matter of improving quality, reducing costs, or both.



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THE INSTITUTE GAZETTE

(Continued from page 416)

the subject of student activities and presented others who discussed individual areas with which they were closely connected. R. B. Merritt, Acting Director of Athletics, reported the existence of 33 touch football teams and 39 basketball teams already in existence as examples of active current interest in intramural sports. Thomas P. Pitre and Joe Jefferson, Director and Assistant Director of Student Aid, respectively, described problems of student aid in relation to the school year 1939-1940 which was chosen as the last "normal" year.

Frederick G. Fassett, Jr., Associate Dean of Students, introduced Professors Laurens Troost, Avery A. Ashdown, '24, John B. Goodenough, and Ernst Levy, four of the Faculty Residents, and described housing problems from what he called a "philosophical" side of the matter. He referred to the approximately 1,600 undergraduates in West and East Campus, and 800 or 900 in fraternities, and the approximately 270 married students, including about 70 undergraduates. The acceptance by students of community responsibilities was emphasized. Automobiles and resulting parking problems and high-fidelity outfits and their resulting decibel levels were described by Dean Fassett as unsolved problems.

R. Colin Maclaurin, Director of General Services, described the business part of housing matters at M.I.T. He discussed the services provided by M.I.T. (but not provided now by most other universities), such as daily cleaning of rooms, police service, and so on — and pointed out that one result is that the dormitories do not pay the Institute the interest on their investment which other uses of the money would pay.

Miss Ruth L. Bean, Assistant to the Dean of Students, introduced Mrs. Margaret Alvord, Resident Director of the women's dormitory, and discussed women students, pointing out that last year there were 107 of them, seeking a great variety of degrees. She stated that a questionnaire to graduates had indicated recently that 85 per cent of them had worked in their technical fields and that 67 per cent of them had married and had children.

Professor Leicester F. Hamilton, '14, described the beginning of a committee of which he is chairman to study the position of women at M.I.T., and to report at the conclusion of that study, expected in the spring of 1956.

Robert J. Holden, Executive Secretary of the Technology Christian Association, described T.C.A. activities.

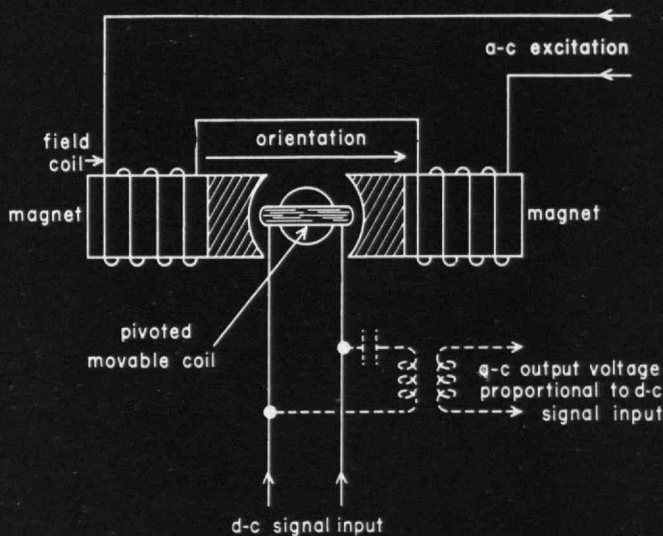
William Speer, Associate Dean of Students, spoke of counseling for students, emphasizing that this was not a special process done by unusual experts but was rather a normal activity improving the effectiveness of relationships between Faculty and students.

Dr. Herbert I. Harris spoke of his psychiatric work among students and Rabbi Herman Pollock, Father J. Edward Nugent, and the Reverend Robert C. Holtzapple, Jr. told something of their work with

(Continued on page 420)

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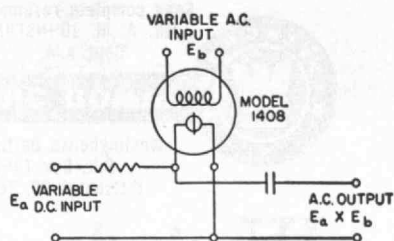
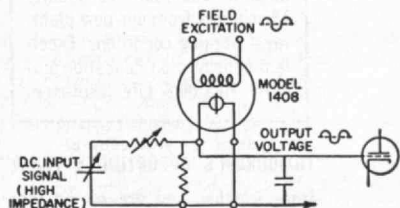
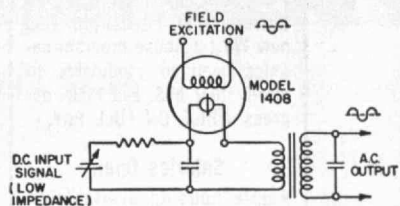
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THE INSTITUTE GAZETTE (Continued from page 418)

Jewish, Catholic, and Protestant students, respectively.

William H. Carlisle, Jr., '28, in charge of student personnel, Klaus Liepmann, Associate Professor of Music, Professor James W. Daily, chairman of the Faculty Committee on Student Environment, and Miles P. Cowen, representative of the Department of Buildings and Power on the Dean's Council, were introduced and spoke briefly of their fields of activity.

The report of the Committee was received for publication in The Review on November 8. It was reviewed by the M.I.T. Corporation on October 3, and by the Institute's Executive Committee on December 15, 1955.

Call of the Sea

MEMBERS of the Visiting Committee on the Department of Naval Architecture and Marine Engineering convened at the Faculty Club for luncheon on May 20, 1955, and later for deliberations in the office of the departmental headquarters. In addition to six members of the Committee* who were present, members of the Institute's Administration who took part in the discussions included: James R. Killian, Jr., '26, President; Edward L. Cochrane, '20, Vice-president; C. Richard Soderberg, '20, Dean of the School of Engineering; and Robert M. Kimball, '33, Secretary of the Institute. After review by the Executive Committee at its meeting on July 22, and by the M.I.T. Corporation at its meeting on October 3, the Committee's report was received for publication in The Review on November 8, 1955.

The Committee was pleased to note that all the recommendations contained in the Visiting Committee reports of the last three years had been carried out with excellent results.

The Committee noted that there were only 6 students in the Sophomore Class while there were 20 full-time Juniors and 11 graduating Seniors. The
(Continued on page 422)

* Members of this Committee for 1954-1955 were: Robert C. Sprague, '23, chairman, Joseph V. Santry, '06, Irving W. Wilson, '11, Alfred T. Glassett, '20, John R. Newell, '34, Daniel D. Strohmeier, '34, David A. Wright, '38, William F. Gibbs, W. Durward Leggett, Jr., and Solon B. Turman.




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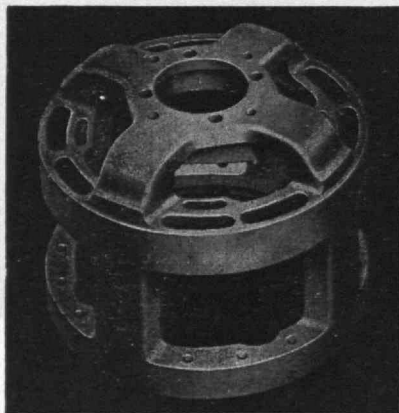
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THE INSTITUTE GAZETTE

(Continued from page 420)

reasons for such a small Sophomore registration were discussed at length, and it was hoped that the 10 Freshmen now registered for the Course would all enroll in next year's Sophomore Class. The uncertain situation of American shipbuilding and the consequent slump in this industry during the past years, widely publicized in the national press, were held responsible for the lack of interest in the Course and subsequent small registration in 1953. It was the unanimous opinion of the Committee that the industrial future is extremely good for the next four years. This opinion was derived from the great number of designs on the drawing boards of the companies represented by some of the Committee members and from the ever-increasing interest of the government and Congress in a ship-building program to maintain an adequate United States commercial fleet or merchant marine.

It was also agreed that the Naval Architecture and Marine Engineering curriculum and the new curriculum in Shipping and Shipbuilding Management are excellent general engineering courses and are not so specialized as many young students seem to think. The large number of Alumni of this Department who have made fine careers in other engineering and management fields is proof that these courses are not too specialized. Since graduating high school students are the source for the school of Naval Architecture students, and this fall [1955] high schools will be visited throughout the country to draw the attention of these students to M.I.T., it becomes the task of this Department's staff members, who are assigned to speak to these students, to emphasize the fact that the Institute embodies one of the three existing schools of naval architecture in the country. Every effort should be made to arouse the interest of Freshmen in the Department and to make them aware of the optimism, growth, and importance of the American shipbuilding and shipping industries which need many more graduates than the Department can at present offer. Such action and information would contribute to an increased enrollment. Twenty students per class would not require an increase in the teaching staff or overtax the Department's laboratory facilities. No young man with a feeling for the sea

(Continued on page 424)

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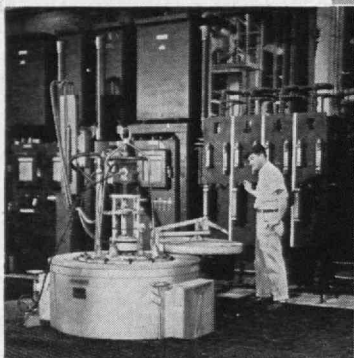
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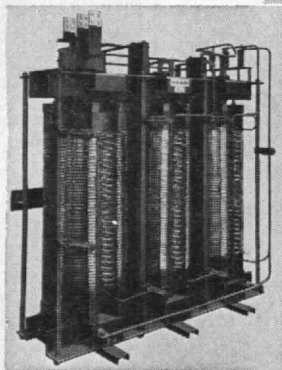
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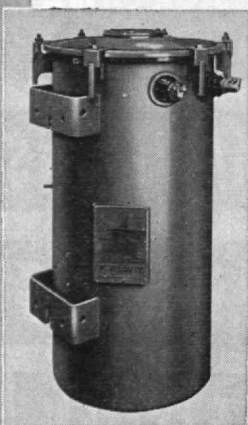
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THE INSTITUTE GAZETTE

(Continued from page 422)

and ships should be discouraged from entering the fields of Naval Architecture and Marine Engineering which have excellent opportunities.

There are many phases of these fields yet unexplored, such as the technical development of larger and faster units and new systems of propulsion and cargo handling. The Committee recommends and supports the writing of a well-illustrated brochure describing the unique features of the shipbuilding industry, and urges its distribution particularly to M.I.T. Freshmen. It is hoped that such dissemination will encourage registration to at least the limit that can be instructed without increase of teaching staff and the present laboratory facilities.

The Committee noted with satisfaction the revisions made in the current academic year of the Sophomore professional curriculum. Such revision will promote a change in atmosphere and offer a more challenging and stimulating introduction to the professional work.

Another matter considered by the Committee was the operation of the Ship Model Towing Tank and the Ship Structures Laboratory. Although the Committee considered their operation highly successful, it was its unanimous opinion that the appointment of full-time assistants to these noteworthy facilities would lead to still greater efficiency in their use by students for their projects and theses, as well as to a more proficient use of the time of the staff members concerned.

The Committee was greatly interested in the proposal of Professor Laurens Troost, Head of the Department, to invite famous European professors of naval architecture and marine engineering to lecture in the Department for one semester every two years. If these foreign scientists received a Fulbright Grant for transportation, it would increase the Department budget by about \$2,000 a year. The Committee agreed unanimously that such a project would be of the greatest value to students and teaching staff alike.

International Week

WORLD problems were discussed by eminent American and Asian leaders during International Week, April 30 through May 6, at M.I.T. Under the sponsorship of the Undergraduate Association, speakers at Kresge Auditorium included: Tran Van Chuong, Viet-Nam Ambassador to the United States; Asdrubal Salsamendi, Uruguay, United Nations Public Information Department; Arthur Lall, permanent delegate to the United Nations from India; and Senator Leverett Saltonstall of Massachusetts.

Meanwhile, a series of conferences were conducted by UNESCO and the M.I.T. Center for International Studies on the subject "Human Values in Social Change in Southern Asia and in the United States."

Rupert Emerson, Professor of Government at Harvard University, was chairman for the conference

(Concluded on page 426)



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THE INSTITUTE GAZETTE

(Concluded from page 424)

and acted as moderator. The basis for discussion was a paper prepared by Guy J. Pauker, lecturer in government at Harvard.

The Asian team took part with other Asians in a similar conference at San Francisco under the sponsorship of the University of California.

"People-to-people" understanding was the purpose of the discussions, according to Willard E. Givens, chairman of the U. S. National Commission for UNESCO. "Without this mutual understanding and trust, our political and economic relations with the Asian nations cannot be sound or successful," he said. "We need to know more about Asian ways of life and Asia needs to know more about the American way of life."

FIRST GREAT EPIDEMIC

(Concluded from page 408)

had been a focus of this disease for many years prior to the outbreak in Athens. You can take your choice.

The whole discussion is, of course, complicated by difficulties in translating certain words in the text by Thucydides, and also by the fact that this layman, acute as he was as an observer, may have been describing patients who were suffering from several different diseases. In every extensive epidemic there are always a number of mixed infections. At any rate, Dr. Zinsser enlisted the aid of some of his eminent colleagues at Harvard who were scholars of Greek, and after much poring over the documents, he still came up with the suggestion of small pox as the most likely classification of the plague of Athens.

Another argument in favor of smallpox is the fact that less than 40 years later a similar epidemic attacked the Carthaginian armies besieging Syracuse in Sicily. As ably and lucidly described by another historian, Diodorus Siculus, this epidemic of 396 B.C. was almost certainly smallpox. It was, he said, characterized by chills and high fever, pains in the back, dysentery, and blisters upon the whole surface of the body. The mortality was high, with most of the deaths occurring on the fifth and sixth days.

The mortality was so high, in fact, that the Carthaginians raised the siege and went home, thus losing control of Sicily. This loss may have influenced the outcome of the Punic Wars a century later, in which most of the early combat was centered about Sicily. If the Carthaginians had been able to maintain a strong position there, it might have been Rome rather than Carthage which was destroyed. Who knows? In 212 B.C., incidentally, a similar type of epidemic, undoubtedly smallpox, assailed both the Roman and Punic armies, and did much damage.

During the past half century the United States has been remarkably free of epidemics, except for occasional outbreaks of influenza, poliomyelitis, and certain other virus diseases which we do not yet know how to control. The day of the great epidemics in the world at large is not yet over, however, although perhaps some day it will be.

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THERMAL PROBLEMS OF HIGH-SPEED FLIGHT

(Continued from page 403)

simple and represent no greater complication than are encountered in the design of an airborne heat exchanger. Air is utilized to absorb most of the heat generated within the engine. Such cooling systems are expected to find use for the next ten years.

Heat Sinks

The heat sinks or absorbers include air, expendable cooling media such as water,⁴ fuel,⁵ and — if the flight time is short — the heat capacity of the aircraft itself.^{6,7} If the necessary temperature level of a com-

⁴ Expendable cooling media are considered to be any substances used purely for cooling purposes carried in the aircraft and eventually discharged overboard; the latent heat of vaporization of these substances, the sensible heat, or any other heat or combination of these heats being used as a heat sink.

⁵ Fuel-cooling applications are those in which the sensible and/or latent heat of vaporization of the fuel is used as a heat sink for aircraft cooling. Fuel-cooling applications differ from expendable cooling media applications in that the fuel is carried aboard the aircraft for propulsive and/or auxiliary power purposes, regardless of any cooling applications.

⁶ Thermal lag-cooling applications are those in which the heat content of the aircraft structure, itself, may be used as a heat sink. As is readily apparent, the use of this means of cooling is applicable only for very short durations.

⁷ If the altitude is sufficiently high (well above 120,000 feet), spacial radiation may provide an additional heat sink. Radia-

tion requiring cooling is sufficiently high, heat sinks often may be applied directly, utilizing the simplest of environmental conditioning systems, as has already been discussed with respect to the propulsion system. If the necessary temperature levels of the equipment requiring cooling are relatively low, however, some sort of heat pump is utilized in conjunction with the heat sinks. When this is the case, a large portion, if not all, of the energy input into the pump is converted into heat and this, also, must be dissipated into the heat sinks.

As the difference between the required temperature levels for equipment and heat sink increases, the heat pump and over-all conditioning system become more complicated and less efficient. Additional work must be supplied to the heat pump to overcome the increased thermal pumping levels; therefore, greater quantities of heat must ultimately be dissipated in the heat sinks. It soon becomes evident that the temperature level required for operation of equipment — rather than the heat generated by the equipment — is often the critical factor in the design of an equipment conditioning system. When this is the case, the importance of insulating this equipment from the remainder of the aircraft, in order to reduce any external heat transfer to this equipment, becomes even more pronounced.

(Continued on page 430)

tion cooling applications are those in which heat may be transferred through radiation to heat sinks such as space, the atmosphere, and other surrounding objects or substances.



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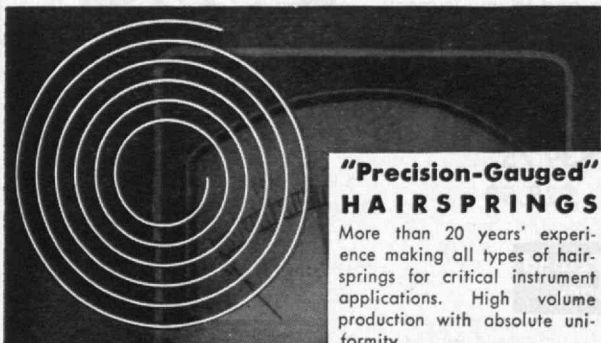
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THERMAL PROBLEMS OF HIGH-SPEED FLIGHT

(Continued from page 428)

A simple conditioning system, such as a heat exchanger utilizing ram air as the heat sink, may provide the greater portion of the aircraft cooling. But more complex conditioning systems, which include one or more heat pumps, are a necessity for cooling certain equipment. As aircraft fly at higher altitudes and greater speeds, larger and more complex conditioning systems will be required.

Heat Pumps

One of the simplest heat pumps is the air cycle and so far it has gained the widest acceptance. The air-cycle heat pump (Fig. 3) is one in which air, the primary fluid, is cooled and pressurized by means of such components as heat exchangers, turbines or expanders, and compressors, pumps, or fans. Usually air flows completely in, through, and out of such an "open system."

Many commercial aircraft contain a vapor-cycle refrigeration system. A vapor-cycle refrigerator (Fig. 4) is one in which a refrigerant is the primary fluid and some type of heat interchange is required between the refrigerant and that which necessitates cooling. The refrigerant circulates through but does not leave the refrigerator; the system is thus closed. Most household refrigerators have this type of cooling system. The recirculating refrigerant is expanded and then evaporated at a relatively low temperature and pressure, absorbing heat from either that substance which necessitates cooling or from an intermediate fluid. Upon leaving the evaporator, the refrigerant vapor is compressed and is then condensed at a higher temperature, rejecting heat to a high-temperature sink. The cycle is then complete and the processes are again repeated.

The absorption cycle (Fig. 5) may have some potential applications. An absorption cycle differs from a pure vapor cycle in that the external energy input is primarily supplied in the form of heat instead of compressor work. The basic cycle consists of five major processes: throttling or expansion, evaporation, absorption, generation, and condensation. The condensed and relatively pure refrigerant is expanded into an evaporator, which is at a pressure equal to the

(Continued on page 432)

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All alumni, living and deceased, are cross-indexed according to Class affiliation; and 44,274 alumni (94 per cent of those living) are cross-indexed geographically according to their addresses as corrected to February 15, 1955.

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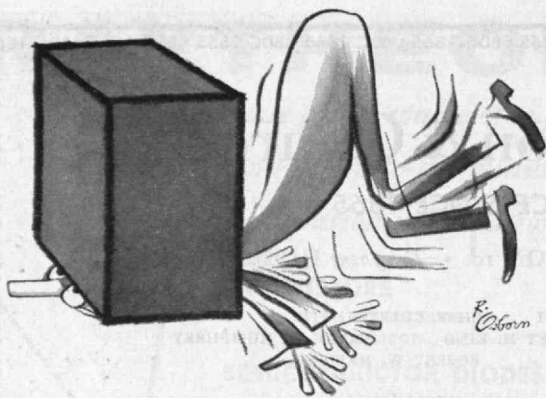
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THERMAL PROBLEMS OF HIGH-SPEED FLIGHT

(Continued from page 430)

saturation pressure of the refrigerant at the evaporator temperature; it is then evaporated. The refrigerant, in the gaseous state, passes from the evaporator to the absorber where it is dissolved in the liquid absorbent. Both the absorbent and the dissolved refrigerant are then pumped to a generator and distilled by the application of heat. The distillate (superheated refrigerant vapor) goes to the condenser, while the residue (dilute absorbent) returns to the absorber through a pressure-reducing valve. In the condenser the refrigerant vapor is condensed and the cycle is completed.

The refrigerant rejects heat to high-temperature sinks in both the absorber and condenser. However, heat is absorbed by the system, either from that substance which necessitates cooling or from an intermediate fluid, in both the evaporator and generator. Relatively little external work input is required in the liquid pump; in some applications, gravity replaces the liquid pump and the entire system then contains no moving parts.

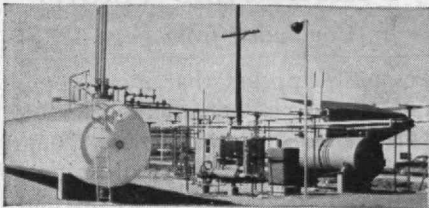
Other heat pumps such as the vortex tube and thermoelectric heat pumps have received some attention. The vortex tube (Fig. 6), also referred to as the Ranque tube or Hilsch tube after its French discoverer and German developer, respectively, is a device — with no moving parts — into which compressed air may be introduced and from which both cold and hot air may be extracted. Compressed air is introduced tangentially into the tube and a helical vortex is established within the tube. Since the compressed air is introduced tangentially, the angular velocity near the center of the tube is initially much higher than the angular velocity near the circumference. As the vortex proceeds down the tube, the viscous forces tend to equalize the angular velocity — the inner portion of air expending work on the outer portion to increase the angular velocity of the outer portion and vice versa. In doing this work, the inner portion has been cooled and the outer portion has been heated. Air extracted from the center portion, downstream, represents a source of refrigeration.

Aircraft Cooling

Applications of thermoelectric cooling are those which make use of the Peltier effect in a bimetallic electric circuit; they operate as a thermocouple in reverse. If an electric current flows through the junction of two dissimilar metals, heat is absorbed by the junction when the current flows in one direction and is emitted by the junction when the current is reversed. The efficiencies of the vortex tube and the thermoelectric heat pump are both extremely low and unless large increases in efficiency can be obtained, it is not expected that they will be applicable for the solution to aircraft cooling problems.

(Concluded on page 434)

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THERMAL PROBLEMS OF HIGH-SPEED FLIGHT

(Concluded from page 432)

At present it appears that more complicated air and vapor cycles, in conjunction with expendable cooling media and fuels, will be the primary environmental conditioning systems used for aircraft cooling during the next decade. Of itself, thermal insulation injects certain penalties in the operation of aircraft, but so, too, does any conditioning equipment that may be required. Both means of temperature limitation will be used, and they will be employed in such ways as will minimize over-all aircraft penalty, and hence maximize the primary functions of the craft. In the future, it is possible that regeneration principles will be utilized in refrigeration cycles. It is also expected that refrigeration and power systems may be combined to produce environmental conditions at the same time auxiliary electrical or hydraulic power is generated. When it becomes practicable, such systems will undoubtedly become prevalent and gain widespread acceptance during the coming years.

Conclusions

New designs, new materials, new methods and techniques of production and new ideas will certainly all be required to make better aircraft that will fly higher, faster. In the light of our present knowledge, the problems imposed in the design and construction of aircraft that travel at ever-increasing altitudes and greater and greater speeds are formidable. But they are not insurmountable. They can be solved, bit by bit, by analyzing the requirements to be fulfilled, by examining present materials, methods, and thought habits to determine existing limitations to progress, by making a conscious effort to overcome the obstacles that arise, and by constantly expanding — in theory and practice — our areas of knowledge and experience.

Only one major problem of high-speed, high-altitude flight has been considered here — that of heat generation, insulation, and dissipation. But the progress that has already been made in solving problems which the thermal barrier raises, and our current rate of progress in finding solutions to still unsolved problems, give ample assurance that man should be able to soar at altitudes of 100,000 feet, and travel over the earth at speeds of Mach 3, within the next decade.

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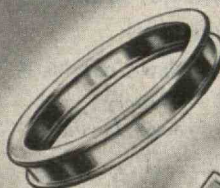
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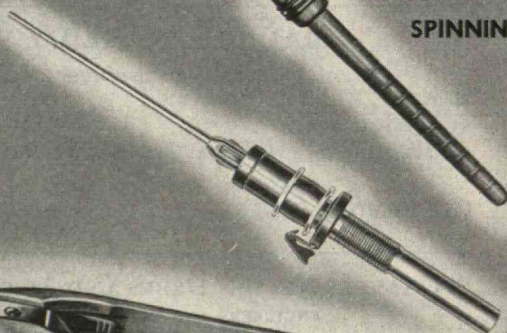
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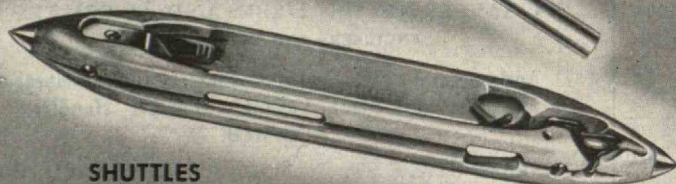
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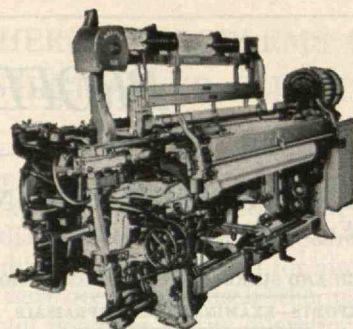
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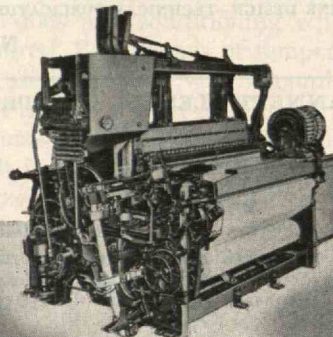
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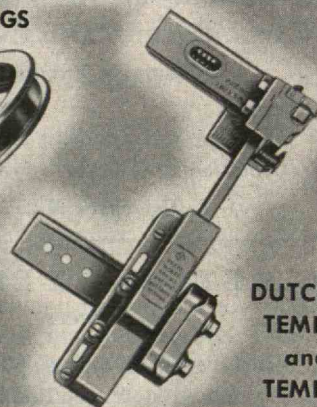
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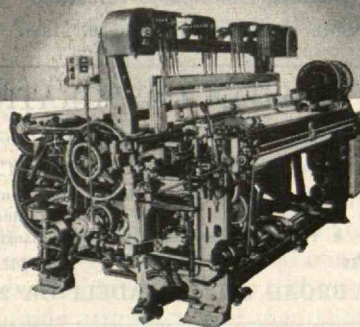
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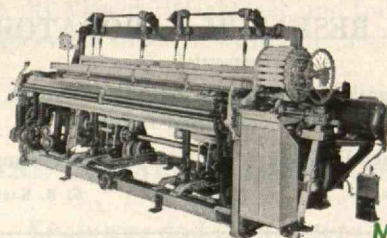
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THE TECHNOLOGY REVIEW

Alumni AND Officers IN THE News

Retirements

ALFRED P. SLOAN, JR.'95, as chairman of the board of the General Motors Corporation to which office he was elected in 1937 after serving as president of General Motors for 14 years. Mr. Sloan will continue as a director and has been elected honorary chairman.

PAUL W. LITCHFIELD'96, as chief executive officer of Goodyear Tire and Rubber Company. He became president in 1926, chairman in 1930, relinquishing the presidency in 1940. In giving up his responsibilities as chief executive officer he will continue as chairman and serve on various management committees. He was 36th president of the Alumni Association in 1929-1930.

Election Returns Show

IRVING D. JAKOBSON'21, President of the American Boating and Yachting Council.

JOHN F. HENNESSEY'24, re-elected to a second term as president of the New York Building Congress.

KARL R. VAN TASSEL'25, named to the new position of executive vice-president of the A. B. Dick Company.

ALFRED J. POTE'26, Executive Vice-president and director of engineering of Hycon Eastern, Inc., of Cambridge, Mass.

CHENERY SALMON'26, Vice-president of D. S. Kennedy of Cohasset, Mass.

THOMAS A. KNOWLES'27, President of the Goodyear Aircraft Corporation.

WILL W. WHITE'29, Vice-president of Esso Research and Engineering Company, an affiliate of Standard Oil of New Jersey.

CARROLL L. WILSON'32, President of the Metals and Controls Corporation.

MANSON BENEDICT'32 and WALTER H. STOCKMAYER'35, Professors of the M.I.T. Faculty, and CLAUDE E. SHANNON'40, research mathematician of the Bell Telephone Laboratories, Inc., as newly chosen members of the National Academy of Sciences.

COURTLAND D. PERKINS'41, Chairman of the Department of Aeronautical Engineering at Princeton University, named chief scientist of the U. S. Air Force, succeeding H. GUYFORD STEVER who returns to the Institute as Associate Dean of the School of Engineering.

RUSSELL DEYOUNG'40, Executive Vice-president in charge of production, personnel, research and development of the Goodyear Tire and Rubber Company.

Honors to

H. B. RICHMOND'14, chairman of the board of General Radio Company and 45th president of the Alumni Association in 1938-1939, the "Distinguished Award" of the Scientific Apparatus Makers Association.

GORDON M. FAIR'16, Professor of Sanitary Engineering at Harvard University, recipient of the 1956 "New England Award" of the Engineering Societies of New England.

ROBERT E. WILSON'16, chairman of the board of Standard Oil Company of Indiana, this year's recipient of the "Washington Award" presented annually by five major engineering societies.

BERNARD E. PROCTOR'23, Head of the Department of Food Technology, the Nicholas Appert Medal of the Institute of Food Technologists.

JAMES H. DOOLITTLE'24, Vice-president of Shell Oil Company, the "distinguished serviceman" invited to the 1956 commemoration of the Battle of the Coral Sea of 1942 as a guest of the Commonwealth of Australia and the Australian-American Association.

Five members of the Institute Faculty and Staff, E. CARY BROWN, FRANK ALBERT COTTON, THOMAS PATTON GOODMAN'55, MILTON CLAYTON SHAW, and FELIX MARC HERMANN VILLARS, recipients of Guggenheim Fellowships for studies in 1956-1957.

Speakers

MARVIN PIERCE'18, President of the McCall Corporation, New York, before the annual meeting of the American Association of Advertising Agencies at White Sulphur Springs, W. Va.

SIMON W. FREESE'21, of Freese and Nichols of Fort Worth, at the international conference on control of water evaporation at San Antonio, Texas.

CRAWFORD H. GREENEWALT'22, President of E. I. du Pont de Nemours and Company, at a dinner of the Bureau of Advertising of the American Newspaper Association in New York City, entering a plea on behalf of the "uncommon man" and against stifling "the creative individual by submerging him into the common denominator."

ALFRED E. PERLMAN'23, President of the New York Central Railroad, before the American Management Association in New York City.

SAMUEL P. BROWN'35, partner in Coverdale and Colpitts, before the Municipal Forum in New York City, predicting that although the volume of commercial traffic on certain turnpike projects may not be materializing at the expected rate, the projected volume will shape up to be in line with estimates.

New Directors

RALPH T. WALKER'11 and ALBERT MAYER'19 of the Regional Plan Association of New York City. PHILIP M. DINKINS'18 of General Aniline and Film Corporation. CARL F. FLOE'35 of Walworth Company. HOWARD S. TURNER'36

of Industrial Research Institute, Inc. GEORGE L. WILLIAMS'39 of Metals and Controls Corporation.

Obituary

CHESTER V. CARLTON'90, March 10
LEIGHTON CALKINS'93, December 28°
ARTHUR E. FOWLE'93, March 14°
CLARENCE E. FULLER'93, September 9, 1955
EARL S. JENCKES'94, April 4
JOHN W. COOKE'95, March, 1946
ARCHER E. WHEELER'95, March 8
ADA E. DANIELS'96, March 4
ARTHUR A. BLANCHARD'98, March 25
ANNIE L. GOODRICH'98, March 15
CHARLES L. KINNEY, Jr.'99, 1948
A. WALLACE MCCREA'99, April 13, 1954°
LOUIS A. SOHIER'99, April 4°
MAURICE DAVENPORT'00, April 1
FRED B. WILDER'00, February 2°
P. FREEMAN GOODWIN'01, April, 1956
DUNCAN R. FRANKLIN'02, March 23°
NATHANIEL SPRAGUE, JR.'02, March 28
HENRY G. HARRIS'03, Date Unknown
OTIS D. FELLOWS'04, April 13
WILLIAM A. CLARK'05, February 18°
AXEL HAMMARBERG'05, August 17, 1955
CLARKE E. WARREN'05, March 10°
RALPH D. KELLEY'06, March 5°
HOWARD W. KEY'06, January, 1956
FLINT C. ELDER'07, January 15°
MATTHEW C. HAYES'08, January 19
CHESTER H. POPE'09, March 6°
RUSSELL D. FRANCIS'11, January 1°
LELAND D. WOOD'11, March 20°
JOSEPH A. SUMMERVILLE'13, December 20, 1955°
HERBERT J. VON ROSENBERG'13, December 6, 1955
FRED W. BOMMER'14, February 10°
ERNEST MATHEW BOYD'14, November 23, 1955°
ROBERT C. DOREMUS'14, March 18
ALEXANDER G. GILLESPIE'15, January 17°
PERCY G. SAVAGE'15, December 5, 1955°
NASH S. WEIL'15, January 8°
ARTHUR L. GUPTILL'16, February 29
KATSUYUKI NISHIZAKE'18, October 14, 1949
DEAN S. SIBLEY'18, February 15
WILLIAM H. TURNER'18, March 11
RUSSELL S. SMITH'19, April 11
CLAUDE KELL'20, 1955°
NORMAN W. HUNTER'21, October 14, 1955
HERMAN H. POHL'21, March 13
VERNON H. SANDERS'21, 1952°
PAUL B. WENDLER'21, December 29, 1955°
PERCY P. PRATT'23, April 4°
PHILIP G. EVANS'25, February 29°
MARY O. SOROKA'26, April 6
FLOYD B. WOOD'37, April 3
DONLEY J. PARR, JR.'10-44, April 13
MALCOLM S. McILROY'47, March 4
CHARLES M. STEESE, JR.'53, April 2
THORKEL HAALAND'54, January°

* Further information in Class Notes

News FROM THE Clubs AND Classes

CLUB NOTES

Boston Luncheon

Thirty-one members of the Boston M.I.T. Luncheon Club met at the Union Oyster House on March 15. The guest speaker was Mr. James O. McDonough '43, a former project engineer at the Institute, who spoke on "The Numerical Control of Machine Tools."

He stated that the first system of Numerical Control was demonstrated in 1952. During the next three years a group at M.I.T. worked on Industrial Liaison in connection with this development.

By way of explanation Mr. McDonough said that Numerical Control is a new form of automation. Whereas in some fields such as the automobile industry, thousands of similar parts are used in a month, other production lines require only a relatively few of each of their parts. The so-called Detroit-type of automatic production would build up excessive inventories in a day or two. It is in this small quantity, job shop production of parts that Numerical Control finds a field of application.

Manual operation of machine tools is wasteful of time because of the hours used in set-up as well as the time required for the machine operator to study the drawings and decide the best method to use in doing the machining. By employing Numerical Control, all decisions are made in the office without tying up expensive production machines.

In practice the complete detailed specifications are typed and a tape is punched out at the same time. The tape is then fed into the machine tool and the various operations are carried out automatically.

The speaker expressed the opinion that M.I.T. can take most of the credit for the development of this new technique and the necessary prototype equipment. Several industrial machine tools employing Numerical Control are now available as a result of this work.

With approximately 50 members present, the M.I.T. Boston Luncheon Club met at the Union Oyster House again on April 12. Chairman Vincent T. Estabrook '36 conducted a very brief business meeting during which Chenery Salmon '26 reported for the nominating committee. The following slate of officers was nominated and elected to serve for the 1956-1957 season: Chairman, Frederick N. Dillon, Jr. '22, Secretary-Treasurer, Chester V. Vappi '48, Executive Committee, Vincent T. Estabrook '36, George W. Smith '26, George A. Parkhurst '36.

The guest speaker, Harold E. Edgerton '27, was then introduced. His talk on his personal experiences with the bathyscaphes was highly entertaining as well as educational. Originally, Dr. Edgerton

used the stroboscopic light solely in studying electric motors but he soon realized the value of high speed flash photography in examining natural phenomena and proposed a study of the bottom of the ocean.

The bathyscaphe used in the undersea exploration is a small submersible vessel in which a person may descend to the bottom of the ocean and take up to 800 photographs without reloading the camera which is attached to the under side of the vessel. Two tanks containing gasoline are used to give it buoyancy. Ballast in the form of bags of steel shot may be jettisoned when the operator wishes to rise to the surface. This freedom of action differentiates the bathyscaphe from Pickard's original bathysphere which was raised and lowered by a cable from a winch on the mother ship.

The original bathyscaphe was built to withstand an external pressure of 6000 p.s.i. so it could safely descend to a depth of approximately 14,000 feet. Since that vessel has been in operation another bathyscaphe has been designed with sufficient strength to descend to the deepest spots in the oceans.

In addition to his work with the bathyscaphes, Dr. Edgerton has developed a camera which can be lowered on a nylon rope from a boat. The difficulties encountered with a steel cable are eliminated as the nylon itself weighs practically nothing in the water.

Following the talk, Dr. Edgerton showed an excellent colored movie of the bathyscaphe and some of the work required to prepare it for a dive. — GEORGE A. PARKHURST '36, *Secretary*, 1284 Soldiers Field Road, Boston, Mass.

Cleveland

As befits an organization which is exactly fifty years old this year (The M.I.T. Alumni Association of Cleveland was founded in 1906), there has been a touch of the past, the present and the future in our recent activities.

The future engaged the attention of members and guests at the general meeting on April 26. Donald P. Campbell, of the Institute's Electrical Engineering Department, delivered a most engaging talk on "Automation," with particular emphasis on developments which coming years are likely to bring.

Nominations for officers was held next. The resulting slate will be reported in the near future.

As was previously reported in these pages, the Club is endeavoring to publish a Golden Anniversary directory of all Technology Alumni presently in the Cleveland area. We implore those who have not yet furnished the data requested for the directory to do so promptly. Unfortunately, the treasury is not sufficiently flush to bear more than a small portion of the cost of the directory, so members will be afforded the privilege of pur-

chasing it at the lowest possible price.

Our means of glorifying the past is to hold a purely social meeting of the traditional M.I.T. smoker type, in commemoration of the aforementioned anniversary. At this writing, that meeting has not definitely been planned but it is expected that it will take place sometime in June. — HERBERT J. HANSELL, *Secretary*, 1759 Union Commerce Building, Cleveland 14, Ohio.

South Florida

The Club held a dinner meeting at the Miami Women's Club, 1737 North Bayshore Drive, Miami, on March 13. The dinner was supposed to be followed by an inspection of the Miami Junior Museum which is located in the same building, but owing to a mix-up no one appeared to open up the place, so the inspection had to be postponed until a later date. Members at the dinner were: Kenneth P. Armstrong '10, Meyer A. Bas-kin '34 and wife, Philip Caplain '22 and wife, W. G. Manley '23, Thomas E. Mattson '24, Robert Nedbor '37 and wife, William Sussman '40 and wife, Charles S. Symonds '35 and wife, Clarence P. Thayer '21 and wife, James B. Wadhams '34 and wife, Lester M. White '12 and wife. The Secretary, having entered actively into the affairs of his adopted city of Opa-locka, recently made a try for election to the city commission, but emerged eighth in a field of twelve candidates, only three of whom could be elected. — KENNETH P. ARMSTRONG, *Secretary*, 145 Sesame Street, Opa-locka, Fla.

Indiana

Those attending the March 15 meeting of the Indiana Association were given a preview of Indianapolis' Weir Cook Airport's new air terminal, now nearing completion, by Colonel P. H. Roettger, superintendent of the air facilities. The fabulous growth of the airport and air-passenger and air-cargo mileage at this field was outlined by Colonel Roettger, as well as the rapid strides being made in instrument facilities and weather equipment. Through his leadership and keen foresight, airport volume has expanded astronomically to an eighth place position nationally for a city occupying a 28th place population position.

The colonel's fine speaking manner has placed him high in this M.I.T. group's list for a repeat performance, and it is hoped that he can be called upon to address the group again in the near future.

The meeting was held at the Athenaeum Turner Club in Indianapolis and was attended by Mr. Frank Travers '23; Mr. Edgar Godley '26, and Mrs. Godley; Mr. John Welch '13, and Mrs. Welch; Mr. John Babbitt '17, and Mrs. Babbitt; Mr. Thomas Dorste '47, and Mrs. Dorste '47; and Mrs. P. H. Roettger. — S. G. PANTAZI, *Secretary*, 821 Broad Ripple Avenue, Indianapolis, Ind.

Milwaukee

A search for the formula for an active Club has occupied President Emerson Van Patten '24, the program committee, and a group of the most active members of the Club during the past several months. The group has been meeting on the second Tuesday of each month for luncheon and discussion of the progress of the Alumni Fund solicitation, the activities of the Educational Council, the Club program, and Club projects. The success of the 1955 Alumni Fund solicitation in Wisconsin has encouraged the Alumni Association and the M.I.T. Club of Milwaukee to conduct a personal solicitation in 1956. As of April 10, Chairman W. H. Schield, Jr. '46 reported a response which was higher than the average for all Alumni last year and was higher than the mark at this date in 1955. Conservative expansion of the work of the Educational Council may result from the interest shown by Club members in this activity. In an effort to provide a balanced program for meetings, a letter survey of all members is being made. The early returns are encouraging in their number and in the opinions expressed. The results of the survey will be a valuable guide to the officers and program committee. Other Club projects will be discussed at future luncheon meetings.

On May 21 at the University Club in Milwaukee, Mr. John Colby, a new member of the Club from Boston, was the discussion leader on Alumni program planning. Short films from M.I.T. were shown, and officers for 1956-1957 were elected at this meeting. — WILLIAM R. BOHLMAN, *Secretary*, 4675 N. 104th Street, Wauwatosa 16, Wisc.

Northern New Jersey

The annual dinner meeting of the Northern New Jersey Club was held at the Hotel Suburban in East Orange on March 6, 1956. One hundred members, wives and guests attended, and pronounced the evening a great success.

Dean Burchard of the Institute gave a stimulating talk on the subject of architecture, under the title "Is Wright Wrong?" His talk was illustrated by color slides taken by himself on travels throughout the world, and covered the evolution of architectural forms and practices from ancient Greek through medieval and Victorian to modern. Dean Burchard emphasized the effects of technological developments in materials and techniques upon architectural usage, and pointed out the reluctance of architects and builders to exploit the capabilities of the materials they were using.

A most interesting feature of the evening was Dean Burchard's discussion of the new buildings at M.I.T., some of which may be somewhat controversial. In response to a question from the audience as to whether a confused pattern would be produced by the variations of architecture amongst the buildings of the Institute, Dean Burchard expressed his personal opinion that the Institute should represent in its various buildings the best of the architectural forms available at the particular time, rather than stick to the architectural form of the first buildings

simply to match what was already there. He predicted that, as time went on and landscaping took effect, the buildings would seem less strange, and would form a part of a pleasing over-all pattern.

Hotel Suburban is much to be complimented for the quality of the roast-beef dinner served, under House Chairman Jim Shyne '43. Arthur Schwartz was chairman of the evening.

On April 3, 1956, at the meeting of the board of governors at Hotel Suburban, East Orange, Treasurer Joe Wenick reported a total of 243 members, and total assets on hand as of April 1, 1956 amounting to \$967.17, with \$477.89 additional in the Club's scholarship fund.

The scholarship committee, under Chairman George DesMarais '20 interviewed 49 prospects on March 31, and prepared their recommendations as to participants for the regional and Club scholarships. DesMarais reported that the Institute employs outside facilities as well as their own, to determine pecuniary need so as to best match scholarships to need as well as scholastic record. About 12 in this area should receive scholarships, which will be announced in May. — STUART G. STEARNS, *Secretary*, 25 Elmwood Place, Short Hills, N.J. JEROME E. SALNY, *Assistant Secretary*, Egbert Hill, Morristown, N.J.

Western Pennsylvania

The March meeting, held on the 15th, commenced with the usual stein session and excellent dinner at the University Club. The program chairman, Bill Humphreys '46, had on tap as guest speaker the assistant director of the Allegheny Conference on Community Development. The speaker's excellent presentation of the history and future plans of the conference regarding development of Pittsburgh and vicinity concluded a successful meeting. Attending Alumni included: R. H. Aborn '20, C. T. Barker '27, N. Baron '49, E. L. Chappel '24, D. W. Dimock '28, W. C. L. Hemeon '26, W. Y. Humphreys '46, B. N. Norris '51, A. J. Oxenham '45, R. L. Whitney '50. — ANDREW A. MAROCCHI, *Secretary*, 445 Serpentine Drive, Pittsburgh 16, Pa.

Puerto Rico

The M.I.T. Club of Puerto Rico held a meeting at the Caribe Hilton Hotel at 7:30 P.M., April 6, 1956. General matters were discussed and a dinner was served. The meeting was attended by about 35 members. After the dinner we stayed at the Hotel until 2:30 A.M., enjoying dancing, shows and entertainment. — ULISES BARROS LOUBRIEL, *Secretary*, Box 9447, Santurce, Puerto Rico.

Washington

The annual Ladies' Night dinner meeting was held on March 22 and featured a talk by Judge Edith H. Cockrill, of the Juvenile Court of the District of Columbia, on the subject of Juvenile Delinquency. The meeting was held at the Cosmos Club and was well attended. Judge Cockrill provided considerable thought-provoking matter on this important subject. William R. Ahrendt, President of the M.I.T. Club of Washington, received special recognition for outstand-

ing technical contributions at the recent First Annual Conference of the ASME Gas Turbine Power Division. The banquet at the Statler Hotel was attended by high-ranking officers and officials of the Department of Defense and industrial leaders. The Honorable Charles E. Wilson, Secretary of Defense, was presented an honorary membership in the American Society of Mechanical Engineers at this meeting. — STERLING H. IVINSON, JR., *Secretary*, 1703 37th Street, N.W., Washington, D.C.

Women's Association

The M.I.T. Women's Association was founded in 1900 and has been in existence continuously ever since. There have never been any notes from this organization in The Technology Review, at least in the memory of the present board. From now on we expect to send in notices of our meeting and any news of importance to the Alumni, particularly the co-eds. Our membership is about 200 and scattered over the world. Our meetings are held at the Institute and are attended by the metropolitan Boston members, but we often have a visiting member from afar, such as Adelaide Toombs Sundin '47 from Sweden, Paulita Nejia '50 from Central America, and Kay Adams Kulmala '44 from Finland. Perhaps we may have more such visitors as our publicity travels farther through the Technology Review. Membership in the Club is open to any former woman student at the Institute.

This year we will have met five times. On October 13, 1955, we met for supper at the Faculty Club and heard Dr. John Trump, Professor of Electrical Engineering, speak on "Medical Uses of High Energy Radiation."

On December 7, 1955, we entertained the undergraduate women students now at M.I.T. at supper at the Faculty Club. This meeting is an annual tradition, honoring Ellen H. Richards, the first woman student at M.I.T. Dr. Max F. Millikan, director of the Center for International Studies, was the speaker.

The February meeting was a Saturday luncheon in the Emma Rogers Room, formerly our headquarters for all meetings. We voted in the revised by-laws and afterwards had an excellent guided tour of the new Kresge Auditorium and Chapel.

On April 4, 1956, the Association had supper at the Women's Dormitory at 120 Bay State Road. This meeting has come to be a bi-annual event and always a pleasant occasion. Two of our own members spoke on their work and proved to be extremely interesting to students and Alumnae alike. Natalie Adelman '50, President, N. J. Adelman Construction Company, Brookline, Mass., and R. Gretchen Van Stratum Nelson '38, President, R. G. Nelson, Inc., Industrial Interior Design, Pawtucket, R.I., are both very successful in their fields.

The annual meeting will precede a dinner at the Faculty Club on May 31. Professor Harold L. Hazen '24, Dean of the Graduate School, will be the speaker and honor guests will include Mrs. Carl T. Compton and Dr. and Mrs. Killian. — FRANCES EMERY WYPLER, *Secretary*, 72 Church Street, Weston, Mass.

CLASS NOTES

• 1891 •

Harrison I. Cole has been a loyal and faithful member of our Class since we all signed up in Rogers Building on Boylston Street in September 1887; a good friend to everyone of us, whom we shall remember as long as we remember anything. Here is his letter: "I wish I could reply to your very welcome letter with something of interest, but affairs with me just kind of go on as usual. Of course, being of Southeastern, Mass., I have a slight interest in a cranberry property which got me a nervous breakdown from overwork in 1954, and a broken wrist last December from a slip on the ice on our reservoir, which experiences are now without apparent damage permanently."

Walter Bailey Douglass, a first-class civil and structural engineer for almost half a century, and artist of competence, a grower of flowers and fruits, and, best of all, a lover of children and men and women, writes as follows: "As you know, my locomotion on foot requires a cane to be a constant companion. On this account many of my former activities have been discontinued; and as for gardening, all that I try to continue is raising raspberries and cultivated blueberries. I have to depend on quite a bit of help to get good results. I still operate an automobile, but do not go on any long trips, for if we make any distances we always go with friends who are much younger. In June this year we are going with friends in Groton on a three-day trip through the White Mountains. The motels make such trips much easier."

"My days of making miniature furniture are over. The miniature room with furniture is in the Currier Gallery of Art in Manchester, N.H. I gave the room to the Currier Gallery in 1952. Of course, it is of great interest to children, and also attracts adult viewers. Sorry you were in an auto accident. Hope it was not serious." I regret I must omit a portion of Walter's letter because of its length. But the story is of a Weather Vane, an artistic creation of stainless steel fabricated by Walter and mounted on the garage of his home in Dunstable Centre, Mass. It was completed some three years ago.

And now in regard to his astounding work in miniatures; we are all deeply in debt to the Currier Gallery of Art for the following: "Through the courtesy of its maker, Walter B. Douglass, the Currier Gallery of Art has on exhibition a single miniature room which is of particular interest since it is based on a room from the 18th Century New Hampshire house, the home of the Reverend Thomas Page, first pastor of the church in Hebron, built by him in 1791. Mr. Douglass, who for 48 years was a civil and structural engineer, is the great great grandson of the Reverend Mr. Page. He explains in his own words how he happened to create this one miniature room:

"In 1940 I had retired from business life and went to Florida to relax, and presumably to enjoy life. After a year of

trying to amuse myself, I found that a continuous program of golf, shuffleboard, swimming, bowling parties, etc. could become very boring, even if one took some time for serious reading. One day I decided I must change my course and do something which would be educational, constructive, and therefore require study, and if possible require manual dexterity. About this time the collection of Mrs. James Ward Thorne's early American furniture was being circulated around the museums in large cities and it occurred to me *there was something worth trying.*"

"Long an admirer and a collector of early American furniture, also an engineer experienced in making accurate detail drawings, Mr. Douglass was well equipped to undertake this project. After studying numerous books and visiting many museums to find pieces of the type used in the simpler homes of the period, he started in, using the very finest woods available, which necessarily had to have very small scale markings. The work was entirely with hand tools, the methods following those used by the craftsmen of early days, the purpose being, not 'to save time, but to see how good a job I can do, by using the methods our early ancestors used.' After making several pieces, Mr. Douglass realized he needed room in which to house them. For his model he turned to the front room in his great great grandfather's house in New Hampshire, of which he knew the dimensions and design, in fact had purchased the paneling and interior finish. The entire room was finally completed after a total of 1800 working hours. Its size is 26½ by 26½ by 12 inches, and it is carried out on a scale of 1½ inches to a foot. Included among the furnishings are a butterfly table, a gateleg table and a Connecticut tavern table, all of a late 17th Century type; also a cradle and stools based on examples in the Metropolitan Museum; a split spindle-back arm chair and a Spanish foot side chair of the early 18th Century; a highboy of about 1690-1710 and a trestle table."

And one thing, dear Classmates, do not forget our annual Class Dinner, Saturday, June 9, at The Brookline Country Club. Come if you can. — WILLIAM CHANNING BROWN, *Secretary*, 15 Forest Avenue, Hastings-on-Hudson, N.Y.

• 1892 •

The secretary has no particular news to report at the present time, but is looking forward to meeting some of our Classmates at the Alumni Reunion this coming June. — CHARLES E. FULLER, *Secretary*, Box 144, Wellesley 81, Mass.

• 1893 •

It is with deep regret that we report the deaths of two members of the Class of '93. Word was received on March 22, from the Alumni Office, of the death of Leighton Calkins of Plainfield, N.J., on December 28, 1955.

On March 22, your Assistant Secretary received a letter from Mr. Ralph Hayden of Los Altos, Calif., Class of 1904, with a clipping from the Palo Alto *Times* of March 15, which is quoted in part as follows: "Arthur E. Fowle, philanthropist, retired industrialist and one of the found-

ers of the Town of Los Altos Hills, died yesterday afternoon (March 14), after a two-month period of failing health. He was 85. Mr. Fowle died of a heart ailment and complications at his home on his 30-acre estate at 26311 West Fremont Avenue. He worked in Mexico for 13 years after his graduation from M.I.T., as a chemical engineer for a large soap and glycerin firm and then helped found the Libby-Owens-Ford Glass Company in 1916. He was vice-president and treasurer of that firm when he retired in 1925. It was then he moved to the Los Altos area. He was one of the organizers of the Los Altos County Fire Protection District, was a member of its board of commissioners and served as president of the board from 1949 until last year. Mr. Fowle donated a half-acre of land on West Fremont Avenue, which the district plans to use as a site for its third fire station. Action on his recent offer to donate another half-acre of land as site for a town hall for Los Altos Hills is pending before the town council. The mayors of Los Altos Hills and the City of Los Altos spoke of the great loss to the respective cities in the passing of Arthur Fowle. He is survived by a son, John M. Fowle, a daughter, Mrs. Marshall Carter, and four grandchildren — Michael and Linda Fowle and Lloyd and Edwin Carter." — GEORGE B. GLIDDEN, *Secretary*. GERTRUDE B. CURRIE, *Assistant Secretary*, c/o Fay, Spofford and Thorndike, 11 Beacon Street, Boston 8, Mass.

• 1896 •

We in New England are emerging from a series of blizzards; a total snowfall of over 40 inches and destruction of property in the millions. As we write (April 10) there remains considerable snow in the isolated areas. It is reported that in the greater Boston area over a million families were cut off from heat and light. It will be for future generations to defend our reputation against reoccurrence of these disasters. With the score of ten up and two to go your Secretaries wish to acknowledge the news items which have come their way through your efforts. Our joint opinion on how to celebrate our 60th Reunion indicates a general trend to limit whatever exercises we decide to consider, to the luncheon period, to be held in the "Rockwell Cage" during the Alumni Luncheon. We report the passing of a Classmate, Miss Ada E. Daniels, 755 Asylum Avenue, Hartford 5, Conn., on March 5. She was a teacher and former head of the domestic science department in Hartford schools. She was supervisor of cooking in the elementary schools for thirty-five years before her retirement in 1934. A member of the Unitarian Church, she leaves a brother, Major Harold C. Daniels of Newton, Mass.; a sister, Dr. Amy Daniels of Iowa City, Iowa; two nephews and four grand-nephews. — JOHN A. ROCKWELL, *Secretary*, 24 Garden Street, Cambridge 38, Mass. FREDERICK W. DAMON, *Assistant Secretary*, Commander Hotel, Cambridge, Mass.

• 1897 •

In response to our circular postal card to the members of the Class, the following containing much of interest was re-

ceived from Jere Daniell, West Franklin, N.H., under date of March 13, 1956: "Thanks for your card stirring us all up to tell the rest of us something of our wasted lives! The last Review brought us all the news of the passing of Class friends, Wilfred Bancroft and Walter Buck. I knew Buck during our Freshman years, and we found that we had some New Hampshire friends in common. Snow, snow and more snow! We came back to New Hampshire on the 2d of the month and since then we have had almost daily storms so "in toto" about 14 inches have arrived just to inform us that spring in these parts is not quite here! About an inch more this morning. On various and sundry of our Alumni steins I note sketches of our Tech totem, the beaver! All dragging their heavy tails behind them! Along in February I noted some peculiar tracks on the ice down on our lake frontage and after careful examination I identified them as our dear totem friends, the tails having left their very evident traces in the soft snow. Further search down along the lake front showed some fallen saplings with plain tooth marks with the cut as clean as a chisel could have made. I kept pushing further afield and about a mile from our house up in a frozen swamp area, well back from the lake, there was the beaver lodge, about four feet high and four feet in diameter at the base. No tracks around it as the entrance was below the water level. The next day with my good wife and a camera we took some pictures which so far have not been developed. About a week later I decided to hunt further for signs and by myself went further up into the swamp area. Do you know, Jack, I think those animals thought I was getting too inquisitive for with no warning at all the ice gave way under me and "Kerplunk" I made a quick immersion up to my waist! Was that water cold! Fortunately for me, most of the ice was solid and I hauled myself out with no great difficulty and "out and run" for home. That was a long mile with wet legs! Darn those beavers, anyhow. They are too smart! No evil consequences though of any kind, except for a few skin abrasions and bruises. Today we vote in the New Hampshire primaries. As good Republicans we take no part in the Kefauver campaign but my nephew Eugene Daniell is putting in some hard licks for Estes. Will be interested in the outcome for his sake."

Our circular postal card furthermore brought out many interesting answers from individuals that we have not heard from for a long time. Luzerne Cowles, I, informs us that one of his grandsons, John Olmsted Cowles, is graduating from M.I.T. in the Class of '56.

The following good letter came from Edwin R. Olin, 98 Park Street, Braintree 84, Mass.: "In reply to your post card of March 5, I must first give you a word of praise for the good work you have done on the '97 news. The doings of a Classmate are far more cheering than news of his death, though we would like to keep posted on both. I had thought that Hatch was the youngest man to graduate with '97 but if Irene duPont says he was younger, no doubt it is so. I was not 21

when we received our degrees, and all three of us took Course X. After forty-nine years and eight months with the Boston Elevated Railway I was persuaded to retire in 1947 before the Metropolitan Transit Authority took over; I worked for some weeks on an Alaska project, also on a Mass. state highway, then settled down to gardening in summer and genealogy in winter. I have not yet found any ancestor who was hanged, but 'they say' we all have one. My garden rather specializes in roses, and once in a while yields a flower as beautiful as its illustration in the catalogue! Can I say more? Work on Red Cross and Community Fund drives offers some diversion, and I sing in our church choir. Just incidentally I have some friends beside my classmates. Hoping you may find use for these few facts."

Proctor L. Dougherty, National Press Building, Washington, D.C., writes: "Your recent and urgent post card brought tears to my eyes as I realized the great difficulties you must experience when you try to break down the natural modesty of '97. Your effort to get them to write something of themselves should be fruitful. So far as I can report our elusory Classmate is still elusive for some reason best known to himself. Since he persists in calling his residence at 709 G Street, N.W., where he calls for his mail daily, he must regularly receive his copy of The Technology Review and note with glee or frown whatever he finds written about himself. Now, take another Classmate, Frederick Hunnewell. He is a roamer. Recently he took a trip to California, just to see the ocean. As a former commander in the U.S. Coast Guard (Navy) he just cannot get the salt sea air out of his system. On his return trip he stopped over at Tucson, Arizona (with his wife) for several weeks. Mrs. Hunnewell may have been with him just to protect Fred from the Indians. Thanks to her he returned home safely, ruddy and rested. Henry Loomis seems to be as well as can be expected for one of his tender years. He oscillates between his Ontario apartments and the Cosmos Club. Always cheerful and enjoys meeting his friends there. Hard, however, to get him out to attend evening meetings of the local Tech Club. I seem to be securely anchored in Washington though some of the links are a bit rusty, none have broken yet. Riding at anchor is a happy experience these days. Our Class Secretary has done a wonderful job in keeping us in touch with the other youngsters of the Class. After 80 years, Congress has allowed us to register and vote May 1 for delegates to the national conventions."

From Ezekiel C. Sargent, 149 Putnam Street, Quincy 69, Mass., under date of March 14 comes the following: "I hesitate to write to you concerning myself, for as you know, I only attended M.I.T. for three years, 1894-5-6. In June, 1896, I entered the employ of the city of Quincy, when the city was about to construct a sewerage system. I remained with the city until 1916, from 1904 to 1916 as city engineer. From 1916 to 1935 I was a contractor engaged for the most part in the construction of highways. In 1935 I was appointed commissioner of public works for the city of Quincy, and remained in that position until 1942. From 1942 to late

last year I have been engaged in various construction projects in this city. I have lived in Quincy nearly all of my life, and have been active in city affairs. In 1900 I married Miss Elizabeth J. Shepherd and we had four children, a boy, the rest girls, all have been married, and I now have five grandchildren. Mrs. Sargent passed away in 1950, and I am living in the house we purchased 42 years ago. My contacts with my Classmates have been very limited; however, I always enjoy hearing about them, and am interested in the affairs of the Institute."

From Jesse W. Shuman, Course VI, 400 Summit Avenue, Minneapolis, Minn., under date of March 10, we received the following: "In the last Technology Review, there was enclosed a card, addressed to me, asking for something about myself. Well—it was nearly 60 years ago that I was graduated from old Tech, and I have lived here in Minneapolis all my life. Sixty years ago there was not very much demand for engineers, as there is now (witness the Sunday N.Y. Times, with several sheets all pertaining to apparent jobs). I fooled around at this and that until I founded my own engineering business, and continued in it, designing hydroelectric plants, for over forty years, from Wisconsin to the Pacific Coast. Now I do practically nothing—read, auto rides, etc. I used to do a lot of research work, but was never able to get along with any of my professors at old Tech—they wouldn't respond to my letters.—I hope you are well and enjoying life."

It is clear from a communication dated March 15 from Miss Helen Elizabeth Keep, Detroit 26, Mich., that she has been a Class member with outstanding artistic ability of which she made good use. In addition she performed notable social services. "In my case Eng means English, not engineering. I finished the course in English in the Senior Class of '97, but I have been notified of dinners, Class meetings of engineers, and have been asked to join the Ordinance. A man said to me not long ago, 'I understand you are a metallist.' I have been called an engineer many times, but I finished the English Course in the Institute of Technology. After I left Boston I edited a column of local history and genealogy for a Detroit paper. Then my friend Agnes Burton, daughter of Mr. Burton who gave the Burton Historical Library, and I wrote the "Guide to Detroit" which is now a collector's item. Then came World War I. I was a member of the New York board of the National League for Women's Service for women who would rather drive a car than sew or knit, which was organized by Miss Anne Morgan and Miss Maude Wetmore and others. With my friends in Detroit we formed a very large and active branch that worked through the war. Before going to M.I.T. I had studied for some time at the Art Institute of Chicago, and after the war, I began to paint again. I had many exhibitions in Detroit and other cities; also in a few College galleries. I have two pictures in the permanent collection of the Detroit Art Institute. I have been interested in collecting material for the Manuscript Division of the Library of Congress connected with one of my special interests.

I have been interested in a few patriotic societies particularly the Colonial Dames. Then there are the Boards most of us are on at times, the Presbyterian Church, several times of travel in Europe and years of happy motoring." In a letter accompanying the above memorandum she adds: "my father was an engineer, also my only brother so I have lived in the atmosphere all my life, often copying my father's papers. His best friend was the professor in engineering at Birmingham University in England, and he belonged to many of the English and American societies as my father did. Now for years Professor Turner's son, T. Henry Turner, and I have corresponded and he has been at our Jefferson Avenue house where we lived for years in Detroit. Henry is now a member of a great many of these societies in England. He is chairman of the corrosion group of the Society of Chemical Industry. He is in charge of the metallurgical research department of British Railways at Derby where he lives. I know he goes to many meetings in England and often on the continent. He sent me a paper he had given, and which had been printed, on "Increasing Importance of Corrosion Studies." It seems to me that such a paper should be sent by me to someone who would understand it all better than I do. I have had other papers from him. I have been trying to find someone here who would know and I am writing this to ask you whether you know any one interested in corrosion? If so, I will be glad to send him Henry's paper. — Miss Helen E. Keep, Hotel Tuller, Detroit 26, Mich." — JOHN P. ILSLEY, *Secretary*, 26 Columbine Road, Milton 87, Mass.

• 1899 •

Henrietta L. Graves, XII, at the age of 93 says she still does her own house work and raises her own vegetables. That's the spirit of '99 at 93. More power to you.

Frederick W. Grover, VII, of 1036 University Place, Schenectady, N.Y., writes that "In 1946 I retired as professor emeritus after 26 years in the electrical engineering department of Union College. Since then, my wife and I have continued to live in the house just off the campus, which we bought when we came to Schenectady in 1920. The past ten years have been fully occupied with historical work for the department and with consultant work of a mathematical nature for electrical companies. A year ago, an article of mine on the design and calculation of an absolute standard of mutual inductance was published in the *Journal of Research of the National Bureau of Standards*. My wife and I remain in Schenectady through the winter months and spend some weeks each summer on the Maine coast at Moosehead Lake. Retirement means a change in schedule, but I seem to be just as busy now as in the years before retirement. It seems strange that you and I can have lived so many years, only fifteen miles apart, without our paths crossing. However, I am seldom in Albany. The parking conditions are such that when I am there I feel like Noah's dove who found no place to rest the sole of its foot."

Everett Pierce, XIII, of Bath, Me.,

had several get-togethers with Ed Packard in St. Petersburg, later reported in California, but a notice from the Alumni Secretary places him back at his home as of March 2.

George Glover, IX, of Melrose, Mass., returned from an air trip to Bermuda the last of March. He reports no snow drifts, no traffic lights, no ranch houses on the island. What a relief, George! A trip by horse and buggy around Hamilton proved very restful. To quote George, "The blossoms at this time of year make the seed catalogs look like thirty cents."

The widow of George R. Townsend, XIII, died in Winchester, Mass., on March 9, according to a newspaper notice. George died last December.

George H. Perkins' son, John '38, is associated in business with him at 201 Devonshire St., Boston, where George has been located for many years.

Walter R. Bean, XIII, reports he has retired. He also reports two sons and two grandsons. One of the latter is in high school and one is with the U.S. Army in Germany. His one granddaughter is in college. As Walter's wife died five years ago, he is living with his youngest son in Braintree, Mass.

Fred Watkins, II, of Highland Park, Ill., is retired and spends the winter season in Florida. He reports that he is about to be moved up a notch in the great grandfather's seat. Walter Sutcliff writes that he retired from Bolton-Pratt Company of Cleveland as of March 28, and was leaving for Florida the next day. Hopes to spend his remaining years "taking it easy."

Operations: Ed Packard, Norman Seavey and Rickards, report recent operations and satisfactory recoveries.

Thomas Todd, II, appears to be still active as the president of the Thomas Todd Printers, Inc., 14 Beacon Street, Boston.

My son, Leighton, XV, recently went into the M.I.T. Club of New York City for lunch. He happened to sit down at a table occupied by an elderly gentleman who turned out to be Harry Keith White, IV, of our Class. Harry says he hopes to be at the next Alumni Day activities in June.

Word has been received of the death of A. Wallace McCrea, IV, of 370 University Ave., Los Angeles. Your Secretary is endeavoring to obtain further details which at the time this is written are unavailable.

Louis Amory Sohler, II, age 79, former electrical engineer with the Stone and Webster Engineering Corporation, died at his home, Barrett's Mill Rd., Concord, Mass., on April 4. Born in Villisca, Iowa, he was graduated from M.I.T. in 1899. For many years he had operated a small farm in Concord, Mass., and was a member of the First Parish Unitarian Church.

The following is another in the series of stories of fellows who "sweat blood and tears" to attain their objective—an M.I.T. education. "All during my four years at M.I.T. I was forced by circumstances to live at home. This meant that each morning I walked one and one-half miles to the railroad station to take the train to Boston, a ride of about eight miles; and then a walk of about a quarter of a mile

to M.I.T. This all took about 75 minutes and the same at night, quite a slice out of the day. This meant I had no college life and thus failed to have some of my rough edges rubbed off. I had exactly one dollar for lunches during the week, so Mrs. King's corned beef hash at fifteen cents a plate was a lifesaver." Secretary's note: Was it worth the effort? This Classmate became later one of the country's outstanding authorities in his specific line of science.—BURT R. RICKARDS, *Secretary*, 173 Edgewood Avenue, Pleasantville, N.Y. MILES S. RICHMOND, *Assistant Secretary*, Little Compton, R.I.

• 1900 •

The Secretary has received from Harry Morris a copy of a book which he has written and privately printed entitled, *Desert Gold and Total Prospecting*. The title page explains the book as follows: "Being the Rambling Recollections and Reminiscences of a Mining Engineer Who Knew the West in the Boom Days at the Turn of the Century—Written Fifty Years Later at the Cosmos Club in the City of Washington." This copy is inscribed, "Greetings to the Class of 1900."

Harry went west immediately after graduating from Course III at M.I.T. and spent about 15 years in various mining fields, principally in Nevada, California and Mexico. The West was still "wild and wooly", particularly in the mining camps and he had many interesting and colorful experiences. This book is a collection of stories about experiences which he had or heard about during these years. It is well illustrated with pictures taken by himself or his side-kick, Dan Johnson (also of the Class of 1900). Incidentally Harry says that he has many other photographs for which he is trying to find a good historical background or a satisfactory repository. He hints at the possibility of another forthcoming book.

Many of the experiences which he relates are both interesting and amusing. For example he tells of the Gans-Nelson fight in Goldfield in 1906 and the wild time that followed when the decision was finally awarded Gans in the forty-second round. Several amusing incidents in connection with claim-jumping are related. In one instance a cabin had been built on another man's building lot. The rightful owner of the lot managed to get a chain about the cabin, and when the family was at dinner he hitched up a string team and moved the shack off the lot without benefit of skids or rollers. The constable gave the family the option of moving the shack off the street or leaving town.

In his wanderings, Harry met many noted characters including Death Valley Scotty, who came into his office for help after being bitten by a snake, and Wyatt Erp who was marshal of Tonopah for a while. Altogether this book gives an excellent picture of conditions as they existed in the mining fields of the West fifty years ago. Included in the book is a short, personal autobiography of Harry himself. He was born in Washington, D.C. (where he now lives) on November 1, 1875. He was educated at two military schools on the Hudson River, one at Peekskill, the other at Cornwall. He en-

tered Tech with us in 1896. During the preceding summer he had worked at a gold mine and stamp mill near Boulder, Col. This experience evidently caused him to join Course III. After graduation he joined Thomas A. Watson of telephone fame and John R. Freeman, noted engineer (M.I.T. '76) in the development of an old mine in Georgetown, Col. Discovering this mine to have been salted, he left it in October 1901 and joined his Classmates, Dan Johnson and Fred Wilder, in the lease of the Reno Reduction Works in Nevada. This was followed after two or three years, by mining engineering work in Mexico. Sometime later he turned to the oil fields of California. Since 1915 he has lived in Washington, D.C., settling his father's estate and dealing in real estate. During the first World War he served with the Fuel Administration and later with the Bureau of Mines and with Herbert Hoover when he was Secretary of Commerce.

We spoke above of Dan Johnson and Fred Wilder as being associated with Harry Morris in the early days. Dan died in 1949 and we have just learned that Fred died February 2, 1956, in El Paso, Texas, where he had lived the past three or four years. We have received a note from Harold Morgan saying that he has had to be in the hospital more or less since last September and that he is to move shortly to Darien, Conn., to be near his son. You will recall that Harold has been unable to walk for several years. We thought from his cheerful letters that he was getting better. We hope that this will still be the case. Our most sincere sympathy and best wishes to you, Harold. — ELBERT G. ALLEN, *Secretary*, 11 Richfield Road, West Newton 65, Mass.

• 1901 •

When you read these notes the Reunion will probably be over so I will confine this month's report to the replies to the Class Letter. Nat Patch, II, from Buffalo, says: "Things have been moving along about in the same old route for me and mine, except that my cataracts are getting to be so thick that I can read nothing and only get a hazy picture of photographs or other things I want to look at. This explains why I do not expect to attend the Class Reunion. I have had some of the excitement that is rampant throughout the country, namely heart attacks. Not as bad a one as the President had, but I have learned how they apply the mechanism to read a cardiograph, and I have learned something of the pain and inconvenience and also the fright of these heart attacks. I want to assure all those attending the Reunion that they have my very best wishes for a happy occasion, and I hope that they will plan for further Reunions in spite of the thinning out of the available membership."

From Archibald Klieves, IV, Wheeling, W. Va.: "Still a commissioner on Wheeling Housing Commission. Fifteen years is long enough to donate professional services, and I expect to be free from it soon. Three months ago I refused to serve any longer as chairman. This housing experience has been very interesting but the last few years have been strenuous." Willard Dow is still playing squash.

Bob Derby sends the following from Williamstown: "In December last I made a short trip to Venezuela both to get away from the cold and to evade the Christmas racket. I went on a combination freight and passenger ship with only 40 passengers. Our first port was Oruba and then we stopped at several Venezuelan ports where we discharged and took on cargo. Among the stops was one at Guanta where we had a magnificent drive over the coastal mountains to one of the finest beaches I have ever seen, with cocoanut trees overhanging the ocean. From La Guaira we visited Caracas, a fine city but oil wealthy, resulting in an atmosphere too like New York or worse. On the way back we ran into a hurricane. Waves 40 feet high and a maximum gale of 85 miles per hour. It was tough and some of the passengers did not take off their clothes for three days. As we struck the worst waves head on, I could feel the hull rivets giving but fortunately they held together and we got into New York two days late. I might also report that I made a short trip to Tennessee in October and among other things paid a visit to the University of Mississippi at Oxford. I was intrigued by the campus informality, even the co-eds speaking to strangers on the streets. It is a great place. I flew down and back."

Richard Dow, IV, Hamburg, N.Y. reports: "Just 'living' in our small village outside of Buffalo. Occasionally M.I.T. Alumni of Buffalo have a get-together or visit one or another of the large industries hereabouts. These trips are very interesting and sort of keep one up to date in some of the rapid advances being made today in science and industry. Here in Hamburg we have a card club for the old 'boys', meeting every week. We play 'Pecho' and develop some hot discussions. You would be surprised. I would like to take a more active part in the many local goings-on but it seems as though an oldster is today considered to be relegated to ancient history. Anyway I'm looking forward with enthusiasm to seeing some of the fellows of 1901." Charlie Tufts, whose address is now Syracuse, N.Y., says: "Sorry, don't seem to have much to report this year." — THEODORE H. TAFT, *Secretary*, Box 124, Jaffrey, N.H. WILLARD W. DOW, *Assistant Secretary*, 78 Elm Street, Cohasset, Mass.

• 1902 •

Roger Greeley, observant of the nature of the recent Class Notes, wrote me a letter which I believe too good for any one to miss. It read as follows, "Dear Burton, I can see that I'm going to be like everyone else — in the Class news just once. It will probably make it easier for you if I write my obituary now and send it on to you to have ready. It takes so long to get The Review out that perhaps it'll be an old story when it appears. A classmate recently asked me if I'd go to his funeral. I told him yes if he'd promise to go to mine. He promised. I have been to his. Now it's up to him to make good."

"Well, just for the record, Marjory and I have put four children through college, paid our bills, enjoyed life, approved of

our 12 grandchildren, voted sometimes one way and sometimes another, lived in one house for thirty years and in one town for seventy (don't add these together, stupid, the house was in the town, too) and were out of New England once for nearly a week.

"I have done some important things. One was to attend our Fiftieth Reunion and discover there a lot of mature young fellows possessed of considerable charm. Another thing was to stick to my job for fifty-three years and pick up some wonderful partners, two of whom survive. The work is architecture, the firm, Kilsam, Hopkins, Greeley and Brodie, and the two partners Walter Scott Brodie and James Cleveland Hopkins. I have been interested in a civic way in the Welfare of Boston, but the interest has been strictly one way.

"I was led away from the old loyalties to become a trustee of Boston University but the family name has been redeemed by a son who has been for many years a professor at M.I.T.; another son is pastor of the great Arlington St. Church; a daughter is wife of a John Hopkins professor; another daughter a psychiatrist at Children's Center near New Haven. Several of our grandchildren will very likely set the world afire a little later, if it isn't already destroyed by the time they get busy — Yours till death."

Later Greeley met Dan Patch and said he felt "like the last leaf on the tree." Dan came back at him with the name and address of seventeen Course IV men with the suggestion that Roger canvass them for news while he himself would do the same with Course XIII. Some very interesting letters have been received from both courses.

Carleton Allen writes — "In my own case I have been most fortunate. After many rough years things are going smoothly, at home with children and in business. I am seventy-five and a half and am well, have a fine wife who makes an attractive home and who is a real helper; two fine children, both of whom are doing very well indeed in a material and other ways; two fine grandchildren about ready for college; and still active in a growing business. I have been in this bank (People's Bank for Savings of New Rochelle, N.Y.) as president for twenty-two years having been a trustee for some time previously. I am also secretary of the Savings Bank Trust Company, an organization of about \$300 million started by the Savings Banks of New York State for the benefit of the saving banks of the state. The work is interesting and I like it. I like to feel that I have contributed something in the industry. You may remember that my father was a founder of the Savings Bank in Holliston, Mass. Our bank has grown from \$24 million to \$37 million in the years I have been connected with it. Perhaps this is the reason I have nothing dramatic to write that might be of interest to others. I hope you will give my regards to Greeley when you see him. I suppose some of the Course XIII men are still building ships. It looked to me that we needed wars to make that business boom. I cannot but remark the difficulty various lines have in N.Y. with the union.

"We take a cruise nearly every year as we have salt water in our veins. The last few years we have been to the Caribbean. Last year we went to Ecuador in March and Venezuela in November. It gives us a chance to be lazy. I don't golf or bowl any more though I do mow the lawn and garden for exercise."

Frederick Mathesius writes from Palm Beach to Greeley as follows — "There is not much to report as I have been retired for a number of years, and am now living quietly at this attractive place and in a salubrious climate far removed from the winter snow and cold of New England. Our one regret was parting with the lovely Colonial home at Stamford; where we had lived happily for so many years, and from where our four daughters had embarked on their own married careers — so far all successful, I am glad to report; with a quota of nine grandchildren, six boys and three girls, all healthy and adorable. The youngest of our daughters has been living in India for the past four years and we visited there year before last after a forty-two day trip by ship to Ceylon then by plane to Madras, Hyderabad and New Delhi. Spent three months at the latter place with auto trips to Agra, Jaipur, Bharatpur, Simla, and Mussoorie. The last two are in the Himalayas, commanding magnificent views of the 28,000 feet high main range extending from Kashmir to Burma, along the entire north border of India. We were sorry to leave that very fascinating country; returning via Beirut (side trip to the Roman temples at Baalbeck) and Italy. Indian architecture and engineering in the time of the Moguls was done on a magnificent scale with the craftsmanship of the finest and far superior to anything I have seen in Europe. I could write a bookful about that trip but that would not be giving the information you have requested."

"My professional career began in 1908 after a trip to Europe, draughting service in the offices of Warren and Wetmore; Parker, Thomas and Rice in Boston; and Howard Greenley. Charles A. Rich was senior partner; and in 1925 George S. Koyl (McKim, Mead and White) joined the firm. Major structures designed during the period of partnership were: Administration Building at Peddie School, Hightstown, N.J.; several buildings and gymnasium at Dartmouth; hospital at Littleton, N.H.; many residences and commercial structures in New York and New England. Just prior to my retirement in 1945, a competition for a proposed post office and U.S. Court House at Montpelier, Vt. was won; but the F.D.R. administration just could not make up its mind to favor Republican Vermont with the patronage and the project lay dormant. A heart attack laid me low soon after, followed by enforced retirement and closing of the office. Mr. Rich had died, and Mr. Koyl had become Dean of the department of fine arts at the University of Penn."

"During the early years I had been active at the Tech Club at Gramercy Park (board of governors). Frank Montgomery, Jack Fruit and Herbert Hathaway of our Class were my cronies then but all have long since been taken away

and are at rest. Pleasant memories of Reunions at Fenwick and of loyal friendships alone remain, so I guess that I have lost interest and Class contacts since their deaths. You asked for a brief paragraph, and I have given a letter-full of family history and experiences, which I hope have not been too boring. Life here in Florida 'suits us fine'. We have a small, attractive home within walking distance of all attractions and facilities here (we are fond of walking) within a short walk of the ocean and the latching string will hang out for any visiting Classmates who may happen to journey this way. Incidentally, Lester Hammond now lives in a most attractive home at Fort Lauderdale. I found him quite well when I last saw him about a month ago."

Other letters are on hand and will appear, we hope, in the July notes.

A note received from Arthur I. Franklin, Course V'98 gives information of the death of his brother, and our classmate, Duncan R. Franklin, on March 23, 1956, in Boston, after a month's illness at the New England Deaconess Hospital. Duncan Franklin was born in Newton, Mass. on November 15, 1879. He was a graduate of Course V — Chemistry and followed chemistry in his career of which his brother says — "The most of his active professional career he was director of chemical research and manager of manufacturing for S. M. Bixby Company of New York and Indianapolis, manufacturers of shoe polishes and leather dressings. He was the originator of 'Bixby's Jet Oil' polishes. Later he was chemical director of F. F. Dalley Corporation which included a merger of Bixby, Two in One, and Shinola Corporations with plants in New York, Rochester, Buffalo, Indianapolis, and Hamilton, Ontario."

"Following his retirement after 25 years with the above named corporations, he established chemical engineering offices at 347 Fifth Ave., N.Y. from which he was associated with several well-known firms."

He was an active member of St. Stephens Episcopal Church in Port Washington, N.Y., where he had been a resident for thirty years. Duncan was not married. His only survivors are his sister, Helen E. Franklin, of Boston, and his brother of Indianapolis. — BURTON G. PHILBRICK, *Secretary*, 18 Ocean Avenue, Salem, Mass.

• 1904 •

It now is time to concoct something for publication in the June issue of *The Review*, and what it is going to be like, I, the author, know very little about now as I start to write it.

I have had no communications from any Classmates which furnish much of anything of interest. Apparently many of our Classmates who went South during the past winter found life in the sunny south land so dull and uninteresting that they thought we would be uninterested to hear about it. I know that Dwight Fellows went down to Florida to the same place as usual but have heard nothing from him during his sojourn there and a telephone call to his home today was unanswered so I presume he is still away. From the four

heavy blizzards we have had here in Massachusetts during the last half of March, this is a good place not to return to before July 4 I feel sure.

Harry Kendall as some of you may know, conducts a fuel business which was established by his father C. B. Kendall in 1874. The old original business sold coal, wood, and natural ice, but although Harry still conducts it under the name of C. B. Kendall and Company, he now sells only coal, oil, and bottled gas. Since I last furnished *Class News*, he has suffered a fire which totally destroyed his bottled gas plant, but a telephone call today reveals the facts that like the felled Phoenix bird of yore he has risen from the ashes and is now again selling bottled gas. Thus does the spirit of '04 overcome obstacles.

Recently I received from Herb Kalmus the annual reports of the Technicolor Corporation, of which he is president and general manager. A somewhat rapid perusal of this volume seems to show that his Technicolor Corporation is a huge and successful corporation. How could it be anything else under the leadership of H. T. Kalmus?

Harry Kendall still admits that his three grandsons aged 7, 9, and 13 are the cream of the crop of swimmers at his old alma mater Gardner High School, a fact which surprises Harry as he himself had no more swimming ability than the proverbial stone.

For this issue I have had no ill news of the sickness of any of our Classmates and those who have been are now improving. Also for once, at least, no member of the Class has passed to the great beyond since our last notes, for which we are all thankful.

From the Alumni office I received the following clipping from the Fitchburg, Mass. *Sentinel* of February 13 telling of the citation received by Shorty Holbrook which has already been the subject of comment in earlier notes, but this clipping gives some interesting facts about Shorty's career. I insert it here for your information. "Elmer A. Holbrook, a former resident and Fitchburg native, who has done outstanding work in the field of mining engineering, will receive the Mineral Industry Education award for distinguished contributions to the advancement of mineral industry education, at an award ceremony in New York."

"Mr. Holbrook was born in Fitchburg, June 23, 1881, and received a bachelor of science degree from M.I.T. in 1904. He received an E.M. degree from the University of Illinois in 1916, and an honorary doctor of science degree from the University of Pittsburgh."

"During his long career, Mr. Holbrook served as superintendent of the Gould Montana Mines Company, worked for the Ruby Gulch Mining Company, and later served as general superintendent of the Daly Reduction Company in Hedley, B.C. He was professor of mining at Nova Scotia Technical College in Halifax, N.S. from 1911-1912 and assistant professor of mining at the University of Illinois in 1913 and 1914. He served as professor in mineral preparations in 1915 and 1916 and then was with the U.S.

Bureau of Mines from 1919 to 1922. He served later as dean of the School of Mines at Penn State College in Philadelphia from 1922 to 1927 and dean of the School of Engineering and Mines at the University of Pittsburgh.

"Mr. Hollbrook is former commissioner for Pennsylvania on the Ohio River Valley Inter-State Water Sanitation committee and was national president of the National Society of Professional Engineers in 1942. He is a member of the Phi Gamma Delta, Sigma Xi, Beta Tau, Sigma Tau, Sigma Gamma Epsilon and Phi Kappa Phi fraternities. He is the author of many articles on mining and engineering and retired in 1950 residing in Pittsburgh."

Yesterday I had a short call from Harry Kendall who dropped in on his way to a convention at the Hotel Somerset. We only had time for a few words, but he did report the death of Mrs. Kendall's mother after a long and incapacitating illness.

A call to Dave Sutton reveals that he is continuing to improve and has been to his office everyday now for a week which is a great improvement over the last report.

Farnham and Rockwood went to Florida earlier in the winter but returned to witness two of the raging blizzards which we enjoyed(?) here in March.

Do you ever hear those radio entertainers Bob and Ray? I think they are funny and one of them always closes the show as I do this one, with the advice to "hang by your thumbs" and "write if you get worse." — HENRY W. STEVENS, *Secretary*, 1082 Commonwealth Avenue, Boston, Mass.

• 1905 •

The title, Professor Yeshiva Institute of Math, 186th St. and Amsterdam Ave., New York City, in the 1955 Alumni Register, intrigued me, so I wrote Bob Beard, I, to see what he really was. I received an interesting reply, a prospectus of the school, several pamphlets on "Tesselated Polygons," Conics, and so on, all so far beyond me as to remind me that my self-estimated proficiency in Math at M.I.T. was a myth. His letter is so interesting that I quote almost in full. "I started working on geometrical designs as a hobby soon after the army benched me for age. This led into my conducting the mathematical laboratory of the Yeshiva Institute of Mathematics. When the project was first organized in 1952, four of us were scheduled to operate this laboratory. Unfortunately Ruth-erford Boyd, art editor of the Curtis Publishing, died of a heart attack at that time. Colonel R. E. Yates, West Point math department, has since shifted to William and Mary, and Professor H. Baravalle, Adelphi math department, has returned to the Waldorf system of schools in Germany, Switzerland and Austria. I believe that we would have produced jointly an exceptional book on graphical mathematics if we had not dispersed. I have constructed a good strong set of about fifty Polyhedra models of basketball size. Each plane forming faces of these models is colored separately. This was my assignment as a member of

the now dormant 1953 committee for a permanent New York Mathematical Exhibit. These models were exhibited at Columbia Teachers College last winter. One student remarked that he would like to see the joker who constructed those five interlocking cubes. He would have been shocked at such an old scarecrow. Last summer the models were exhibited in Winnipeg at the Canadian Congress of Mathematicians. They have just been returned from the Kent School 50th Anniversary exhibition. The enclosed publications give some idea of my work. Our son and daughter have each provided us with three fine grandchildren who are prime participants in our plans and affairs. I intend to keep on grinding out math ideas as long as I have what it takes. Plain bench warming is no good. I feel that it is part of the grand design that we shall keep on growing mentally as long as we live, much as trees keep on growing as long as they live. When they stop growing they soon deteriorate and die. And generating a little internal radiance in the minds and hearts of our successors is a project that is very much worth while."

I also quote from a recent letter from Edgar Bailey Cooper, II. "Am pleased to have heard from you and to learn that so many '05 men are still going strong. I am still plodding along at industrial construction work except that I have cut down to about a 30 hour week. In fact, my outfit has not grown big like so many others. In this way I avoid stomach ulcers, heart attacks, and so on, which so many of my competitors acquire. I have missed the Reunions on account of home problems. You see, my daughter and her son have been living with us for the past eight years. She is a wheel chair case of multiple sclerosis. We have a maid four days a week but my strength is often needed evenings. My grandson thirteen is my pride and joy at present. I ride, swim and hike with him especially on scout camp outs where I am sort of special instructor in woodcraft, knots, and so on. My son has three children so I have four grandchildren in all." Coop's remark about so many '05 men still going strong, caused me to analyze a bit. Of the approximately 240 listed as living about 50 percent are listed as retired. The vocational status of the other half is problematical, as many have given their address only. This reminds me to ask again if anyone has a Ten Year Book he is willing to contribute to the Class records.

Andy Fisher, who, by the way, is my most frequent visitor, as well as cooperator in obtaining Class Notes, criticizes my notes from the standpoint that it is depressing to have the notes end with a chronicle of deaths in our midst. He insists that we should end with humor, so I am appointing him Class Notes Humorist. However, we do have to list the passing of old friends and this month it isn't easy. William A. Clark, IX, of Key West, Florida died on Feb. 18, 1956. Details are lacking. It is with a very personal sense of grief that I announce that Clarke E. Warren, II, died at Traverse City, Mich. on March 10, 1956. No one at the 50th Reunion suspected

that Clarke had any serious infirmities, but the family had known since October 1954 of the threat of bone cancer. In October 1955 it began to have its insidious effects and from then until he died he was hospitalized most of the time. Louise writes that he was always the grand, gallant soldier, courageous to the end. Besides Louise he left three sons and two daughters.

Roy Allen is responsible for the news that Lloyd Buell, after a brief and apparently uneasy retirement spell, left California "full of vim and vigor" according to Roy to tackle a two year construction job at Abilene, Texas. Frank Chesterman although technically in retirement, is head over heels in a big camp development drive for the Boy Scouts. The last time I saw Percy Goodale he was limping along on account of water-on-the-knee, developed while trying to schusch (or something) the stone along in a curling match at the Winchester Country Club.

Arthur F. Belding, II, writes from Copenhagen that he has actually retired and moved to Denmark with his wife and family. Art was with Joy Manufacturing Company (we used to call it Sullivan, as I remember). During his 29 years in London, he married a Danish girl and they have now returned to her homeland, which Art says they are enjoying very much. The address is Frederiksburg Alle, 78 Copenhagen F, Denmark. Awaiting a report from the censor, we are leaving Andy's humorous story until a later date. — FRED W. GOLDTHWAIT, *Secretary*, 274 Franklin St., Boston, Mass. GILBERT S. TOWER, *Assistant Secretary*, 35 North Main Street, Cohasset, Mass.

• 1906 •

At this writing, April 16, your reporter, after fighting the New England blizzards, is caught between the job of sending out the final general letter on our 50th Reunion and the necessity of filing Federal and State income tax returns. As a result the notes will have to be brief.

When you read these it will be just about the time of our 50th Reunion, so there is no point in devoting any space to the attendance. As was said in the May notes, the account of the Reunion will be included in the first issue in the fall, which is in November.

The April notes referred to letters which Andy Fisher had received as a result of his writing to some of the men he knew in '06 about the 50th Reunion. One more letter has been forwarded by him which came from Ralph N. Sargent, X, who is living in Land O' Lakes, Fla., at 218 Bell Lake Road, Route 1, Box 216. The letter reads as follows: "I was glad indeed to hear from you and to see that you are still active. However, I am living a quiet, rather inactive life here and try to do enough chores around the place to keep me in tone. In '53 my heart went bad and reduced my activities to about 25 percent I should say, but I feel fine so long as I obey the rules. For this reason I will not attend the Reunion but would welcome calls from any of my Classmates. I live right on the shore of Bell Lake, a quarter mile off Rt. 41 left

side about one and one-half miles south of Land O' Lakes P.O. Drop in any time."

Harold Coes had occasion to be in Boston on Saturday, March 31. This presented an opportunity for the Class President, the Vice-president, Sherman Chase, and the Secretary to meet at the Engineers Club and review the plans for the 50th Reunion. One item was discussed which might be mentioned in this column. Classmates may recall Miss Lillie Collamore Smith, Course V, who became a teacher of domestic science in the Brookline High School. She passed away on August 9, 1935, leaving a bequest of several thousand dollars to the Alumni Association of M.I.T. "for the benefit of the Class of 1906." No use has ever been made of the bequest and it has increased to an amount of somewhere around five thousand dollars. Considerable discussion has taken place among the officers of the Class as to the disposition of this fund and as a result of the meeting at the Engineers Club, it was agreed that the Alumni Association should be notified that the fund should be added to the Class 50-year gift to the Institute. This is mentioned at this time as it may be news to some Classmates, although undoubtedly those who attend the Reunion will learn about it there. Frank Benham returned from Florida the first part of April, spending the most of his time at Daytona.

News has been received of the passing of another Classmate, viz., Ralph D. Kelley, Course I, who resided at 33 Leighton St., Medford. He died March 5 in South Yarmouth, Mass. The death notice in the *Hyannis Times* of March 6 listed Kelley as a civil engineer employed by the city of Boston and he is survived by his widow, Henrietta F., a daughter, Mrs. Harriet Auclair; a son, Ralph, and several grandchildren. The Class card record showed Kelley as being assistant engineer for the Missouri Pacific R.R. Company in St. Louis in 1913; in 1915 he was located in Kansas City with the same railroad. Since 1918 he has resided in Massachusetts, in Somerville until 1946 and thereafter in Medford. In 1948 he was listed as being with the Metropolitan District Commission although the death notice indicated that he was a civil engineer with the city of Boston at that time. — JAMES W. KIDDER, *Secretary*, 215 Crosby Street, Arlington, 74, Mass. EDWARD B. ROWE, *Assistant Secretary*, 11 Cushing Road, Wellesley Hills, 82, Mass.

• 1907 •

On March 26 I received a brief note from Mrs. Lulu M. Elder saying that her husband and our Classmate, Flint Cummings Elder, had died very suddenly from a massive thrombosis on January 15, 1956. Flint received his degree at M.I.T. in the course in Chemistry. From 1908 to 1910 he attended the School of Mines at Columbia University, graduating with the degree Met. Eng. In January, 1911, he became metallurgist with American Steel and Wire Company and continued with that company during his entire business life, becoming successively chief metallurgist, director of re-

search, special research engineer, and in June of 1944, director of research and a company director. He retired from active business several years ago. He was a member of many professional societies and a trustee of Euclid Avenue Congregational Church in Cleveland, Ohio, his home address having been 3041 Edgehill Road in Cleveland Heights. He is survived by his widow and one daughter.

Changes of address without accompanying news are not very interesting, but here are a few, and perhaps you men who may be personally interested in these fellows will have better success than I have had in securing replies to letters written to them. Jesse R. Clark, Course II, lives at 112 Pinckney St., Boston 14, Mass.; William Henry Martin is now at Water St., Mattapoisett, Mass.; Donald E. Russ has moved from Wakefield to 365 Haverhill St., Reading, Mass.; Everett Rich, Course II, now lives at 250 South Union St., Burlington, Vermont; and Frank R. Vanderstucken's address is care of Mrs. Oscar R. Lundin, 29 Stratford St., West Roxbury 32, Mass.

As of February 29, 1956, our Class was credited with \$10,945.24 contributed to the M.I.T. Alumni Fund of 1956, which is an average of \$159.00 per man. This came from 69 men, or 37 percent of the number on our active Class roll. — BRYANT NICHOLS, *Secretary*, 23 Leland Road, Whitinsville, Mass. PHILIP B. WALKER, *Assistant Secretary*, 18 Summit Street, Whitinsville, Mass.

• 1908 •

Our third dinner-meeting of the 1955-56 season, which was to have been held at the Faculty Club had to be cancelled on account of the bad weather, which followed several late season storms. "Old fashioned winters" are still possible it would seem.

We are having our Informal Reunion on the Cape June 8-10 just before Alumni Day at Cambridge on June 11. Headquarters will be at the Melrose Inn, Harwichport, Mass. Ladies are invited and we are looking forward to a very enjoyable time at our 48th. The following letter from Charlie Steese will be of interest: "Sorry to read about the broken leg which I hope is now as strong as ever. I shall miss Gurney and good old Line Mayo. Frank Towle has just written about the proposed Reunion on the Cape and I hope that you are able to make a go of it. I am planning to attend the Dickinson Commencement in Carlisle over the week end of June 1-4 and then come to Boston for our meeting June 8-11.

"My son, Charles, Jr. was discharged from the Army in February 1956 upon completion of his two years active duty and is now in Pasadena, Calif., as a research assistant and a candidate for his Ph.D. degree at the California Institute of Technology. He already has his degrees in science; bachelor's from Cal Tech in 1951 and master's from the Institute in 1953. I am just waiting for another 18 months or two years to see how well he cashes in on his life work with all of those degrees.

"Since my trip last year in June to Boston I have been east to Carlisle and

Miami, Fla., in October to attend that famous Legion Convention which was rained out for three days. Last month I went to Pasadena to see Charles and strangely enough met only about 75 miles of wet slippery going on the entire round trip although the newspapers at the time were full of accounts of tornadoes, floods, sandstorms, blizzards and heavy snows over the southwest.

"I have written this, not with a desire for publicity, but so that you will not look at me dourly next June when you tell the Class that you are always short of news."

A very beautiful kodachrome card from Jimmie and Mrs. Burch staying at Sea Crest Manor, Hollywood, Fla. "Greetings from Hollywood, Fla. Sorry to learn of Mayo's and Gurney's passing. Seems like a terrific mortality among the faithful. Hope you are back on your feet again after an evidently unpleasant experience. Best regards from us both."

The North Adams, Mass., *Transcript* of March 3 had an interesting bit of news about Jim McGowan. "A former North Adams resident who has held all the top management posts with the Campbell Soup company since joining that firm 47 years ago is retiring. He is James McGowan, Jr., of Beach Haven, N.J., who is stepping down as chairman of the board, the position he has held since 1950. He will be succeeded by Oliver G. Willits, but will continue with the company as a director.

"He has served successively as assistant general manager, production manager, director of research and development, and vice-president in charge of research and development. He was president of the company from 1946 until 1953, and also has been chairman of the board of Campbell Soup Company, Ltd., of New Toronto, Canada. Since 1954 he has been a trustee of Drexel Institute of Technology in Philadelphia. He also is a director of the Pennsylvania-Reading Seashore lines, Philadelphia Manufacturers Mutual Insurance Company, and is a life member of the corporation of M.I.T."

Jim was due to retire several years ago, but they wouldn't let him. Best wishes for a happy retirement. H.A.S.N.? — H. LESTON CARTER, *Secretary*, 14 Roslyn Road, Waban 68, Mass. LESLIE B. ELLIS, *Assistant Secretary and Treasurer*, 230 Melrose Street, Melrose, Mass.

• 1909 •

Jim, VIII, and Mrs. Critchett have just returned from a four-week trip to Haiti and he sends a letter which you have received by now.

For some years Harvey Pardee, VI, has been our Assistant Secretary representing the Chicago area. He went to Chicago immediately following graduation and for most of the time has been a consulting engineer, the firm being Harvey S. Pardee and Associates. Recently we learned that he had pulled up stakes in Chicago and gone to California. We have just received the following letter from him: "Your kind letter of April 2 reached me a little late and I hasten to reply with the advice that I finally did say goodbye to Chicago after forty-six

years spent in the workshop of the world. I am continuing my professional work in Sunland, a part of Los Angeles, and living with my sister, Mrs. E. P. Harper, under the most congenial conditions imaginable, flowers, swimming pool, music and entertainments. Just returned from a few days exploring Death Valley on a 1000-mile trip. The scenery is beyond my powers of description. The people here brag incessantly about the weather but I prefer that of Chicago with its variety; sun, rain, snow, and snappy cold. The best things they could brag about are the fine quality of the people themselves with their hospitality, good nature, culture and enterprise. America holds no better. I am actually thinking about retiring—sometime in the next twenty years. At the time of leaving I was about the only member of our Class left in Chicago and I found the names of only five in L.A., none of whom I have met yet. What happened? Outside of my own family, my M.I.T. Alumni association has been the brightest spot in my lifetime." Harvey's new address is 10445 Johanna, Sunland, Calif.

In the May number of *The Review* we told of the death of Chet Pope, X, and stated that we would tell more about him in this issue. Chet prepared for the Institute at Winthrop High School. His folks owned the Cliff House, a hotel in Winthrop, Mass., where he lived while at the Institute. He was a member of Osiris and the Chemical Society of which he became secretary and president; the Tech Show Chorus; Institute Committee; and the Junior Prom Committee. He was also right tackle on the Class football team both years and those who saw him remember how aggressively he played. He was a worthy partner of Jim, who played right guard beside him. After graduating from the Institute he was employed a number of years by the Forbes Lithograph Company of Boston as a chemist. In 1917 he joined Ault and Widorg of New York in charge of ink production and eastern sales of dyes and dry colors. Three years later he developed gloss varnishes for inks used in printing on cartons. In 1927 he formed his own company, Pope and Gray, Inc., of which he was president. Several years ago the New York Printing Ink Production Club presented him an award as master ink technologist. He held patents on three of his ink varnish processes. We all remember the entertainment which he contributed to our class reunions with his Kodachrome slides taken during his trips to South America and Europe. Jim writes the following tribute: "I presume you have noted the death of Chet Pope. The manner in which I got the news is something of a coincidence. Mrs. C. and I were in Haiti on a four week trip. I had cut loose from newspapers and all such contacts with home wanting to get as free as possible of our usual way of life. For some reason I felt impelled to buy one paper, the New York *Herald Tribune* on March 11. In it I noticed with some shock the passing of Chet. Why and what urged me to buy that particular paper? Chet was one of my special friends both in school and more recently and one we all will miss. I feel

he had a full life, one that was more than usual in its success, and that except for the last few years his was a happy life. What more could one wish for." Chet lived at Short Hills, N.J., and many of us remember his summer home at Hyannis to which he invited all members of the Class at the Fortieth Reunion at Oyster Harbors. He is survived by his widow, Mrs. Marcia B. Pope, and children, Diana, Amanda, Philip and Fergus. — CHESTER L. DAWES, *Secretary*, Pierce Hall, Harvard University, Cambridge 38, Mass. *Assistant Secretaries*: HARVEY S. PARDEE, 10445 Johanna Avenue, Sunland, Calif.; MAURICE R. SCHARFF, 366 Madison Avenue, New York, N.Y.; GEORGE E. WALLIS, Wenham, Mass.

• 1910 •

I was delinquent on the last issue of *The Review* as it happened that information from members of the Class was just about zero.

Alfred Hague has come to my rescue and sends me a list of those who are attending the Class Luncheon every month in New York City at the Woolworth Building. On March 14 there were seven in attendance; Carroll Benton, Carroll Shaw, Henry Schleicher, Alfred Hague, Gordon Holbrook, E. M. Potter and Jim Tripp. Carroll Benton is going on a Caribbean Cruise and Al Hague started on an auto tour on March 21, expecting to visit New Orleans, Tucson, Salt Lake City, Cody, Wyoming, Colorado Springs and Chicago. I hope Al has as good a time as I did when I took a similar trip three years ago.

I met Al Huckins a week or so ago and I do believe Al's the youngest looking man in the Class.

The American Bilrite Rubber Company has acquired control of the Boston Woven Hose and Rubber Company of which John Bierer was president. The new company is retaining John as president. The following news clipping about Raymond Jacoby has been received: "Raymond W. Jacoby, consultant to the Ciba Co., Inc., and president of the American Association of Textile Chemists and Colorists, has joined the staff of the Department of Textile Chemistry of the School of Textiles, North Carolina State College, for two months. He replaces Professor Kenneth S. Campbell, who has gone to Peru to organize textile courses in schools there. Mr. Jacoby received his B.S. from the Massachusetts Institute of Technology, and has been employed by the Rockland Finishing Co., the U.S. Finishing Co., and the Arkwright Co."

According to notices of changes of addresses, Holman Pearl who has been living in Waterville, Me., is now with Hollingsworth and Whitney in Mobile, Ala.

Our Alumni Association executive vice president, Harold Lobdell (Lobby), when in Dallas recently was talking with Frank Bell who was inquiring about members of the Class and Bob Breyer's name was mentioned. Also, when he was in Los Angeles talking with Bob, Frank's name was mentioned. In each case an exclamation was made that could only be answered by Mark Twain's famous saying "Grossly Exaggerated."

Hal Manson and I manage to get together monthly at the Alumni Council meetings. — HERBERT S. CLEVERDON, *Secretary*, 120 Tremont Street, Boston, Mass.

• 1911 •

Word has reached us of the death of two more classmates: Leland D. Wood, VI, died March 20 and Russell D. Francis, III, New Year's Day, 1955. Wood was active in Rotary and Masonic circles and was an engineer for many years with Hudson, Mass., Gas Company, transferring to Norwich, Conn., Gas and Light Division in 1936. Retired in 1950, he had lived since in Yarmouth, Me.

Russ Francis was a cancer victim, according to his widow. He worked up until November, 1954, and passed away January 1, 1955. He was office manager of the Boston branch of the Lunkenheimer Company, valve makers, and had been with the company for well over 30 years. He was a Mason, a member of Dalhousie Lodge, Newtonville, and a member of the American Legion, the Appalachian Mountain Club of Boston, and for many years an ardent member of the Boston Camera Club. His interest in photography is said to have started with snapshots taken during an expedition to South America in his undergraduate days. He leaves a wife, Vera, and a son, Roger Dean Francis, 9.

"Eagle-eye" Ina MacPherson (Roy's wife) learned that a proposed addition to Tower School, Marblehead, Mass., will be dedicated to the memory of our late Classmate, Walter D. Allen, whose tragic death in a train wreck was reported here last month. A trustee of the school since 1951, Walter was president of the board at the time of his death. A plaque will be placed in the new wing to memorialize his contributions to the school.

A recent issue of *Aviation Week* has an interesting article featuring the work of William Hennick Martin, VI, who has been the Army's director of research and development since last September, following retirement from Bell Laboratories, as reported earlier in these notes. The title explains the subject matter concisely: "Army's Weapon Plan Indicates More Responsibility for Industry" and there's a fine candid shot of Bill with it.

According to the author, Bill "already is convinced that the most important aspect of his program is that of proper planning—which he defines as 'the matching of operational needs with technological potentialities.'" What must be provided, Martin says, is "data on which to base sound decisions as to what to develop, produce, and use."

Bill recently told the Army Scientific Advisory Board in a meeting at Fort Bragg, N.C.: "The design-development phase is one which I feel should be placed largely in industry and for new complex devices, the design-development agency should preferably be the one responsible for the initial production of the new item. This is particularly important with such new complex devices as guided missiles, fire control systems and communications equipment, where freedom from service failures and ease of maintenance are so desirable." Bill also denied

his approach is a departure from traditional Army development philosophy but acknowledged it is one already used widely in the aircraft industry.

He believes the best way to introduce a new item into service is to make the initial production contractor "responsible for the initial supply of special tools, testing equipment and information required for the installation, testing adjustment, operation and maintenance of the new article." This, he admits, is a close approach to USAF's weapon system, giving entire responsibility to the prime contractor for successful performance.

In conclusion, the article mentions the fact that President Frederick L. Hovde of Purdue University recently succeeded our own M.I.T. President Killian, who has headed the Army's Scientific Advisory Panel since 1951. Martin has suggested that the panel adopt an organization that is divided into four areas to cover Army interests: fire power; mobility on the battlefield and in getting to the combat area; communications and reconnaissance for a mobile and dispersed Army; and logistic support for a mobile and dispersed Army. "With the current and long-range pictures," Martin concludes, "we are in a good position to determine what steps we should take in getting from where we are to where we want to be in 1965 . . . avoid making marginal improvements which are not worth the effort and expense . . . with today's technological potentialities we must increasingly select the critically important projects, rather than try to carry all those that have interest." Good common sense.

After first indicating his chances "poor," it's fine to hear in early April that Bert Fryer and his wife, Ethel, plan to be with us at our "45th." He writes from Carnation, Wash.: "I have disposed of my berry ranch this past fall, just before the big freeze, and sold all of my stock, so now have nothing to tie me down, so I plan to get East for the Reunion in the late spring—if we ever have a spring (still winter here!)."

"Just returned from a trip to Los Angeles and southern Oregon and had a couple of weeks with my daughter who lives in Arcadia, where I ran into some good weather. Still have some consulting with the companies to whom I have sold my patents and goodwill, so get around and see what is going on in the kilndrying industry. Ethel and I are going to Vancouver, B.C., this week (Easter week) to look over one of my brain children—this being my swansong as far as directly handling these installations."

It was also nice to hear from Nat Seeley, II, who retired two years ago: "Your report of Reunion prospects has been reviewed by Louise and me with the result that our verdict is that it's best to board the bandwagon pronto. Am feeling much better than when I had to miss your January luncheon (and the boat show). Greetings from Shippan Point, Stamford, and see you all in June. Hope General George Kenney gets there!" But it's tough to hear that Charlie Hobson, X, plant superintendent, Barium Reduction Corporation, Charleston, W. Va., probably won't be with us, for "at present expect to be tied up in

the startup of a new oxide plant we are building, but you can never tell—I still might drop in!" Let's hope so, Charlie!

Fred Daniels, VI, still active head of Riley Stoker Corporation in Worcester, writes: "Things are crowding up the first part of June, but I still hope to be down on the Cape for the 45th. By the way, speaking of grandchildren, Eleanor and I have six: daughter Eleanor, who married Samuel C. Bronson, in 1950, has Peter Goddard Bronson, three, and Amy Daniels Bronson, one and one-half, while son Bruce Goddard Daniels, married in 1948, has Sarah Daniels, six and one-half, Judith Daniels, five, Eleanor Goddard Daniels, II, three, and Fred Harold Daniels, II, a year old in mid-June. This accounts for only six—no Class record—but I still have hopes."

President Don Stevens, II, left April 7 with Lois, Carver, Lois, Jr. and her husband, her two daughters, Sandy and Doffy, and Grandma Stevens, for a Bermuda vacation. He and Lois and Don's mother will be with us at Snow Inn. Have heard of two more Classmates retiring: Reuben Y. Althouse, I, for many years assistant chief engineer of Hewitt Robins, Inc., Robins Engineers Division, New York, is now living in retirement at R.D. #1, Long Ridge Rd., Hawley, Penn.; and Brigadier General Lawrence, USA Ret., VI, retired a year now, has moved from Bethesda, Md., to 322 Hartford Rd., South Orange, N.J. Also it's great to learn that G. Arthur Brown, X, has now been made a full professor at Lowell Technological Institute, he and his wife making their home at 22 Westford St., Chelmsford, Mass.

These notes will appear just before the "big doin's" in celebration of our 45th Reunion at Snow Inn, Harwichport-on-Cape Cod, and if YOU find at the last minutes it's possible to get to Snow Inn—just pack up and hurry there. We'll take care of you somewhere on June 8, 9, and 10. Or maybe you can't get there, but you can get to the Institute for Alumni Day, Monday, June 11. In that case, see you there!—ORVILLE B. DENISON, *Secretary*, Chamber of Commerce, Framingham, Mass. JOHN A. HERLIHY, *Assistant Secretary*, 588 Riverside Avenue, Medford 55, Mass.

• 1912 •

A note from E. L. Homan states that after retiring from the General Electric Company on Oct. 1, 1954, he is living at his home, 14 State Street, Marblehead, Mass. He would be delighted to see anybody who is coming his way this summer.

C. L. Levermore is now living at 1 Washington Avenue, Morristown, N.J. He has been with General Chemical Company, a division of Allied Chemical and Dye Corporation, for over 43 years. He is at their new research headquarters in Morristown. He expects to retire late in 1957.

B. F. Brann, who has been at the University of Maine for many years, has retired and bought an old house in Winthrop, Me. He is busy remodeling and repainting and is looking forward to spending the summer at his camp on an island in Lake Winnepesaukee.

A note from Ted Marceau, St. Peters-

burg, tells of a pleasant visit from Charlie Carpenter and his wife who were driving through central Florida on their way to Smyrna Beach.—FREDERICK J. SHEPARD, Jr., *Secretary*, 31 Chestnut Street, Boston 8, Mass. LESTER M. WHITE, *Assistant Secretary*, 1230 N.E. 102d Street, Miami 38, Fla.

• 1913 •

Weell! to me bonnie laddies and lassies, when you read these notes, your reunites will be enjoying the sunny glens and slopes of either Coonamessett on the Cape or the grassy braes and dells of the Briggs Stadium in Cambridge. The Place, the Time, and the Plans have been selected for the 1913–1956 Interim Reunion. All's set for a glorious get-together. If you can't be present, why don't you send us a letter or a wire so that your frolicsome Classmates will know that only time and tide prevent you from participation in our 43rd Reunion.

From all of the latest reports and notes, Fred Murdock is still sojourning at the Mimosa Inn, Tryon, N.C. He informs us that if his Missus is in better health come June that he (Fred) will be with us with an entirely new wardrobe which he bought for Grace Kelly's wedding but like Clark Gable was not invited. Fred has forwarded several kernels of news: Our good friend, Edward Melville Bridges, following his graduation at M.I.T., was associated with the architectural firm of Coolidge and Carlson, Boston, for 15 years, where he was office manager, and under his management the Wesley Methodist Church of Worcester, Mass., was built. Later, he became the associate architect at Dartmouth College at the time of designing of the Baker Memorial Library. In 1928, Ed established his own business and at the same time was also a professor of architecture at M.I.T. In 1946 he commenced his present full-time practice. Bridges is a registered architect in Massachusetts, Maine, New Hampshire, Rhode Island, and Connecticut besides being registered in Washington, D.C., and being certified to practice architecture anywhere in the United States. Ed holds membership in most of the outstanding architectural institutes and associations in America. His latest accomplishment is the design and plan of the First Baptist Church's new education wing in the Town of Milton, Mass. He has been a resident of Wakefield, Mass., since 1924 to date; and during this period has been active on the planning board, serving as chairman 17 years; as well as a trustee of the local YMCA; and a trustee of the Wakefield Savings Bank. Ed, we are all proud of you, and your type of citizen keeps our New England towns always American. C. P. Wetherbee, VI, has again taken his pen in hand after ten years and writes us a newsy letter and I quote: "I assume you are the Phil Capen I used to know—even though you now indicate your name as George. I get around to writing about once in every ten years and I presume it is now that length of time since I last wrote, so that is par for me—which is better, much better, than I do on the golf course. Primarily, it is my sad duty to report that one of our Classmates, Joe (Joseph A.) Summerville died of a

heart attack just before Christmas — December 20, I believe. He had a coronary thrombosis attack something over two years ago; recovered; but succumbed to a second attack. Joe dropped out of the Institute at the end of his sophomore year, but I think he will be remembered by quite a few of the old Course VI group. He had served in various engineering capacities with Stone and Webster; Brooklyn Edison; Philadelphia Electric; and for the last 15 years had been an engineer with the New York State Public Utility Commission and located at Ithaca, N.Y.

"Joe was a hard conscientious worker in all his professional jobs and always a loyal Tech man, even though he didn't graduate. I assume this will be passed on for the Institute records. As for myself, after having been with the Telephone Company in Philadelphia for almost 40 years, the last 15 or so as general traffic engineer, I decided to take advantage of their retirement plan and pursue a life of leisure — which consists of travel with my wife, raising a crop of grandchildren and trying to find time to do all the things I used to do when I didn't have the spare time, I do now. I trust you and yours are enjoying life, too." Thank you, C.P. I am glad to know that you have joined us busy retired guys. Many thanks for the short eulogy on Joe Summerville. I wish more of the boys would write us the facts of the passing of any of our Classmates. Yes, I remember Joe very well and we should all pause a few minutes and pray for such a fine fellow. Our old friend, Bill Guild, is still making a name for himself as the "Pied Piper" of science. He has established The Science Center in St. Petersburg, where he is the director of the educational program. Bill sponsors science fairs, golden age groups, and science clubs. He writes: "Thought you would be interested to see the enclosed reprint from the October *Reader's Digest*, which has now been reprinted in 8 foreign countries, with a total readership, I am told, of 72,000,000 people. Inquiries have flooded in from all over the world. The impact of this introduction of science to the elementary teachers and children will be increasingly felt in the years to come." Bill's aim in this wonderful effort of his is to teach science so that even those not blessed with a scientific education and especially the boys and girls will obtain a real grasp of the many phases of the workings of the present day research as well as a groundings of earlier discoveries of our arts and sciences. To quote The *Reader's Digest*, "You know why I succeed?" he confided. "I don't know very much. But I can think like a boy." Thus speaks Uncle Bill Guild. Wonderful, Bill, you and Larry Hart should get together, for you are both performing a great service for our youth. Congratulations! Several issues ago, we mentioned rather briefly, regarding the demise of our Classmate, Herbert A. Sweet. Just lately, we have received a short treatise from Marshall Dalton '15, President of the Boston Manufacturers Mutual Insurance Company where Herbert was last employed and I quote: "We regret to announce the death of Herbert A. Sweet of the standards department, suddenly, on September

24. He was to have retired in a few months. Mr. Sweet graduated from Massachusetts Institute of Technology in 1913, with a degree in civil engineering. After working for the Boston and Maine Railroad as inspector and draftsman, he joined our plan department in 1917 and the next year transferred to the standards department. He was active in the development of many of our standards, and his pioneering work in earthquake and wind-storm resistance, and the development of sprinkler tank specifications, were especially noteworthy." We were also fortunate in talking with the Reverend Doctor Dana Mclean Greeley, the Rector of the Arlington St. Church, Boston. Dr. Greeley praised our former Classmate, Herbert, very, very highly as he had been very active in the affairs of this church. The Class of 1913 joins with me in extending to Sweet's family our most sincere sympathy. Shall be looking to see you in Falmouth at the Coonamessett Inn, June 8. — FREDERICK D. MURDOCK, Secretary, Rumstick Road, Barrington, R.I. GEORGE PHILIP CAPEN, Assistant Secretary, 623 Chapman Street, Canton, Mass.

• 1914 •

There have been few months recently when there has not been some report of Ray Dinsmore. Most of his activities reported are those associated with his presidency of the American Institute of Chemists. A pleasant item recently was his announcement that the 1956 Gold Medal of the American Institute of Chemists had been awarded to a friend of many of us, Raymond Stevens '17, President of Arthur D. Little, Inc. of Cambridge. Another item about Ray's activities, which it would be impossible to publish in these columns, is a picture in "The Percolator of The Chemists' Glee Club." Right in the center, as if carrying the tune, is Ray. This picture of him would certainly win the award of "Expression of the Year."

While in New York City in late March, your Secretary had the pleasure of talking with Charlie Fiske and Herman Affel. The principal subject discussed was the method of handling our Fifty-Year Gift to the Institute. It will be recalled that Art Peaslee is Chairman of the Special Gifts Committee. A few days earlier Art and Herman had had a dinner session to discuss the gift fund. Art had stopped in New York before leaving on a short Caribbean cruise. However, he expected to be home early in April to press his solicitation actively.

In financial journals one frequently reads comments on the time-credit situation. This is a matter of great interest to Charlie Fiske, Executive vice-president of General Motors Acceptance Corporation. This work requires him to travel around the country frequently, both in connection with large financing undertakings and speeches to financial groups. Early in March Charlie was the speaker in St. Louis before 1600 credit men at a dinner meeting of the American Bankers Association.

From time to time there has been some comment in these columns about our Classmate, Tatsuo Furuichi, who was a student in engineering for the Japanese Navy. Later he became an Admiral in the

Construction Corps of the Japanese Navy. After the war he became chairman of the board of Midoriya Electric Company, Ltd., an importing company. Your Secretary hears frequently from him, and the Admiral sends, via your Secretary, an annual contribution to the Alumni Fund, which in the case of 1914 is also for our Fifty-Year Fund. Your Secretary has often wondered what he looked like now, so to satisfy my curiosity a photograph was received from him. He is a most attractive, dignified gentleman. Your Secretary only wishes that he, and probably other Classmates also, had such a full head of hair.

Word has been received of the death of two Classmates. Ernest Mathew Boyd died November 23, 1955, at Fresno, Calif. Boyd was married on June 15, 1916, to Mildred M. Sears. She and a daughter, Barbara, survive him. Boyd prepared at the Boston English High School and also at Berkeley Preparatory School and graduated from the Institute in mechanical engineering. During World War I, he worked with the E. I. Du Pont De Nemours Company in the manufacture of smokeless powder. He had served as assistant supervisor at their Carney's Point plant, but in recent years he made his home in California.

Fred W. Bommer died on February 10 of a coronary attack at a Boston hospital. Although originally a member of the Class of 1912, Bommer joined our Class for his Junior and Senior years, graduating in chemical engineering. He devoted his whole business life to the rubber industry, being associated first with the Boston Woven Hose and Rubber Company and then successively with the Converse Rubber Shoe Company, Lambertville Rubber Company, and the Arlington Rubber Company. In 1932 he joined the Acushnet Process Company to form their division for the manufacture of the well-known brand of golf balls. This division became a wholly-owned subsidiary with Bommer as its head, with the title of chairman of the board at the time of his death. This company is located in New Bedford, Mass., and Bommer made his home in recent years in the neighboring city of Fairhaven. He had many civic and social memberships. Bommer is survived by his widow, the former Doris Saunders, and by a son and daughter. — H. B. RICHMOND, Secretary, 275 Massachusetts Avenue, Cambridge 39, Mass. H. A. AFFEL, Assistant Secretary, 120 Woodland Avenue, Summit, N.J.

• 1915 •

What a Class! Henry thanks the 115 Classmates who have already paid their Class dues for their prompt and generous response; several 10- to 25-dollar checks, with one for 100 dollars put our exchequer in fine shape. Many thanks — many blessings to you all.

Many interesting notes with dues checks add exciting and colorful news for our column. Stan Osborne: — "I am still working for the health of the people and recently was reappointed for another four-year term as State Commissioner of Health for Connecticut and will be located in Hartford. I think often of our Class." Good work, Stan. Burr Swain: —

"We had a fine party in New York which I enjoyed better than anything in the previous six months. My family have all grown up." A fine guy, Burr, and he plans to be at the Boston Class Dinner in April. Doug Baker sends his best regards to all Classmates — especially Course VI. And Jerry Coldwell: — "It was nice seeing you all in New York and I hope your trip to Ralph Hart's apartment after the Class Dinner was productive of results — of one kind or another. (Jerry should know those results!) Best regards to the Boston gang." Maurice Brandt: — "It looks now as though it's still 'Help Azel' — with Henry helping Azel and we help Henry!! But we all help old M.I.T. 1915." That's the Class spirit, Maurice!

Mervin Hart, 1370 School House Road, Santa Barbara, Calif.: "We have just purchased a small ranch house out here. I hope to get back to one of our Reunions — maybe the next one. I have a lot of friends and relatives who summer at Martha's Vineyard. Give my regards to "Skinny" Campbell (he must mean Bill), Orton Camp, and Harold Worthington." Sol Shneider: — "I was glad to see you and the other 35 Classmates at the dinner in New York on January 27. This was a wonderful turnout, considering that we had our 40th Reunion last June. Of course, it took Hank Marion and Larry Landers and Ralph Hart, as well as the "boys" from Boston to make it a great success. I suggest that a New York dinner be made an annual function of the Class. Will try to get in touch with you when I again get to Boston this summer." Larry Quirk: — "Love and kisses to you, Henry, dear." In answer to a little leg-pulling, we gave Charlie Williams about his vocal efforts at the New York Class Dinner, he writes: — "Thanks very much for your nice note, though I'm afraid you may have been just a trifle too strong in your praise of my singing. My wife has a daughter living in Boston and we get up there to see her and her children once or twice a year. I sure hope it can be made to coincide with one of the 1915 parties in your fair city." With a generous check, Seward Highley said: — "With the price of everything else up, why not Class Dues?" Now there's an idea! How about it?

Otto Hilbert: — "All the snow and ice we are having makes me long for Cape Cod again, or Mexico, where I was this winter." Otto wrote from Corning, N.Y., in the heart of the famous snow belt. Bowman Atkins, whom we hadn't seen for a long time: — "I haven't yet recovered from our Fortieth Reunion. Congratulations for a very good time." Thanks, Bow, it was swell to have you with us. Don't miss the next one! Sam Otis: — "I am now a 'grandpa' — still active in architecture, though beginning to think of retirement. At present am deep in a civic project to publish a history of my home town. Local M.I.T. Club gatherings continue to be stimulating, and so it goes." Bill Stephenson, from Hopeman Brothers, Inc., 156 East 46th Street, N.Y. 17, sends regards to all. We are sorry to learn that David F. Condrick is at Veteran's Administration Center, Barracks #2, Bay Pines, Fla. Does anyone know what happened to him? Ed Whiting: — "We had a fine

crowd at the New York Class Dinner. I hope you all got back safely to Boston." We did. Loyal Parry Keller, on his card from Paris, mailed early in March: — "I have spent a very busy day seeing Paris. This trip has taken six weeks. I have been in England, Sweden, Denmark, Holland, Belgium, Luxembourg, West Germany, and France. I am taking off for New York tomorrow. Enough traveling for a while. I am homesick for the grandchildren. My best to you and Fran."

Boots Malone, Bluffton, S.C.: "We've been in a turmoil moving our small house nearer the May river. We spent one night with the house on top of the truck. We are now settled again with services connected, and welcome any Classmates going by this way. We are near Savannah." Harry Murphy: — "My 'chit' for 1915 is enclosed. I would like to be able to write some bright and interesting news but nothing has happened to me since 1929, at which time I got married and went broke all in six months. Hope to see you soon." Now, there's a guy — happily married — children and grandchildren and far from poverty-stricken. What more could he ask? Plenty has happened to him since 1929. All these notes with Class Dues might lead you to think Henry is riding high in his new treasurer's job, but Ed Sullivan chops him down to size with this confidential message to me: — "Have you had that fellow, Henry Sheils, bonded?? He's a slippery guy." This could reflect the low character of Course I. In the April 4 Concord (N.H.) *Daily Mirror* is a bright picture of Speed and Molly Swift cutting their fortieth wedding anniversary cake at New London, where they held open house for their friends and neighbors. Congratulatory wires were received from President Eisenhower and Sherman Adams. We add our own Class congratulations to the former Senator and Molly.

I know you will all be glad that Al Sampson is home at 9 Thorndike Street, Beverly, Mass., making a steady and sure recovery from his recent hospitalization. When I saw him early in April he looked and felt fine. Keep it up, Al. That tough old modest Hank Marion wouldn't tell us about his hospital party, but he did write to Al Sampson. We're glad Hank's better and wish him a speedy and complete recovery. Hurry up and get well, you two, we all miss you! Here's Hank's letter: "Thanks so much for your card of good wishes, received here at the hospital. It is a wonderful feeling to know that your friends are thinking of you when the aches and pains are a little rough, as they are the first few days after any operation, no matter how minor. I am happy to say that everything has gone along on schedule and today I am leaving the hospital, the eighth day after the operation."

On March 3, in Boston, Sam and Ida Eisenberg's younger son, Herbert William, was married to Miss Melissa Jane Lees. All the best from 1915 to this young couple for a long, healthy, and happy life!

The 78th annual report of the Mutual Boiler and Machinery Insurance Company, signed by our own Jack Dalton, is a very impressive presentation and reflects Jack's able and energetic leadership.

On April 7, in Boston, Bob Warren, director of exploratory research, Keystone Custodian Funds, Inc., gave a paper on "How to Plan Your Investment Account." Congratulations, Bob!

Douglas McMurtrie has recently been promoted by Brown Company, Berlin, N.H., to director of research. It couldn't happen to a nicer chap — who well deserves this position. Congratulations, Doug!

All Classmates, with their families, ladies, and guests, are warmly invited to the Class Cocktail party, Monday afternoon, June 11, at four o'clock, at The Algonquin Club, Boston. This precedes the Alumni Dinner later that evening at The Statler. But it makes no difference whether or not you attend Alumni Day at M.I.T. or go to the dinner, we want you all to come to the Class Party. Remember what a gay time it was last year! Al Sampson and Barbara Thomas are putting it on again this year. See you and yours there!

It's sad to report the passing of these Classmates. Our Class feels for their families and has sent sympathy to them.

Brigadier General Alexander G. Gillespie, VI, died on January 17, 1956, and was buried in Arlington Cemetery. Nash S. Weil, I, died on January 8, 1956, in Atlanta, Ga. P. Godfrey Savage died on December 6, 1955, at Clearwater, Fla.

Next month's column will report a big Boston Class Dinner, to be held on April 20, when we are expecting many distant dignitaries from New Hampshire to New Jersey to join with us and "Help Azel." — AZEL W. MACK, *Secretary*, 100 Memorial Drive, Cambridge, Mass.

• 1916 •

Just about the time that this issue of The Review is arriving at your homes, the 40th Reunion will be in full swing at the Oyster Harbors Club on the Cape, and at the time that this column is being written it certainly shapes up as probably one of our finest Class get-togethers. Let's hope that nobody was disappointed at the last minute and had to miss it, and let's hope that many others who were apparently tied up at the time the notices on attendance were coming in found a little time to break away and get to the Cape for a day or even a few hours or perhaps were able to make the Class Cocktail Party at the Campus Room of the Graduate House at M.I.T. on Monday, June 11.

Stew Rowlett dropped us a few lines which make good reading as follows: "Your letter of January 23 keeps popping up to the top of the unfinished business pile on my desk. I guess I might as well answer it so I can file it. I appreciated the picture which still reposes in my desk. I don't dare take it home. I was too obviously on my way out when it was taken. I really have nothing exciting to report. I broke loose for three weeks for driving around England and Scotland last May; married off my last daughter in August and am now trying to get the exchequer back in shape for the 40th Reunion this year. Keep me posted on when and where the festivities will take place. At my age I need plenty of time to get in shape."

Hovey Freeman writes: "My wife and I travelled some 15,000 miles and greatly

enjoyed all the countries in South America and particularly the flight over and along the Andes. In Lima, Peru, Vincenti Checa'17, and a Deke, took the time to come down 500 miles from his tremendous ranches in northern Peru and spent two days with us. It was great seeing him after 40 years. I cannot say that he has changed much and he asked many questions about those who were at the Deke House when he and I were there and wanted to be remembered to any that I might see . . . he is well and very much alive and still can spot a good-looking girl without the need of glasses."

We are indebted to Samuel C. Prescott'94, Professor Emeritus at M.I.T., for this note which he received from Aime Cousineau and which gives us news on Aime's current activities: ". . . I have retired on pension on the 1st of July 1955 and I have now a private consulting office, in spite of my 70 years (last Nov. 20). I went to Europe last fall for two months, mainly in France. I have, however, travelled in England and Italy, mainly in London and Rome. In Paris and the latter two capitals I had many interviews with planners and transport executives. I am now enjoying a partial rest but cannot stay idle."

Very happy to report that Bridgie Webber, who has always been with us as far as he and we were concerned, has now been officially transferred to our Class from the Class of 1917.

Vannevar Bush had a very interesting article in the February 1956 issue of the *Atlantic* entitled "Can Man Live Without War?" In this article he expressed the idea that man can live without war so long as each man has the opportunity to develop his talents to the utmost for his own benefit and the benefit of his fellow man and that the struggle for this opportunity be entered upon with decency and dignity and be conducted with fairness and good will.

Then, there was an interesting article by Tom Holden in the Construction newsletter entitled *Building Business* put out by F. W. Dodge Corporation. It is entitled "Hard Facts About Highways" and appears in the January 1956 issue. In it, Tom points out that attention must be given "to the practical matter of fitting vastly enlarged highway construction programs into an economy already operating at close to capacity in many vital respects." He states "putting the highway program in its proper perspective, it is only reasonable to ask where the materials, labor and machinery are coming from to produce 92 billion dollars' worth of roads in ten years without serious inflation and disruption of the private economy." Further on he says, "If we were to maintain the established (economic) pattern and still meet the projections of more than \$200 billion of highway (\$88 billion) and other public works construction (\$112 billion) we would have to average about \$80 billion of new construction a year for the next ten years; this in turn would mean an average total national output of more than \$800 billion a year. . . . The estimates of the President's Advisory Committee on a National Highway Program show a \$444 billion average Gross National Product for the next ten

years, reaching a \$505 billion peak in 1964." In what we felt is one of the most sensible articles on this subject, Tom concludes and recommends "that estimates of the order shown in the prospectuses issued for a national highway program be subjected to suitable discounts in the interest of realistic thinking and planning."

We have had many news items on Joe Barker over the years, but here is a biographical sketch of Joe which gives us a pretty complete resume of his very full and accomplishing life to date. (This appeared in the August 1955 issue of *Mechanical Engineering*): "Joseph Warren Barker, who has been nominated to serve for one year as President of The American Society of Mechanical Engineers, is Chairman of the Board and President of Research Corporation, a nonprofit foundation, and Chairman of the Board of the wholly-owned subsidiary, Research-Cottrell, Inc., New York, N.Y. He is also the current (1954-55) President of the Society of the Sigma Xi, national scientific association. Mr. Barker, who lives in New Rochelle, N.Y., came to Research Corporation in 1945 as acting president and was elected President in 1946 and President and Chairman of the Board in 1947. He was born in Lawrence, Mass., June 17, 1891. After attending the University of Chicago, where he studied in the physical sciences under Prof. Robert Andrews Millikan, he was graduated from the Massachusetts Institute of Technology in 1916 with an electrical engineering degree. Upon graduation he was commissioned a Second Lieutenant in the Army and from 1918 to 1922 served in the American Expeditionary Forces and the American Forces in Germany. Following his resignation from the Regular Army in 1925, he spent his career in educational work, starting as an associate professor of electrical engineering at the Massachusetts Institute of Technology. From M.I.T. he went to Lehigh University in 1929 as professor and head of the department of electrical engineering and then to Columbia University in 1930 as dean of engineering. He resigned his deanship in 1946 to become President of Research Corporation. From 1941 to 1945 Mr. Barker was on leave of absence from Columbia to serve as special assistant to the Secretary of the Navy. During this period he was responsible for policy of all educational and training programs, particularly the highly successful V-12 Naval College Training Program. He also served as the representative of the Secretary of the Navy on the War Manpower Commission, as co-ordinator of training liaison for the Secretary of the Navy, and as a member of the Joint Army-Navy Personnel Board from the date of its inception in May, 1942, until he left the Navy in 1945.

"Mr. Barker joined the American Society of Mechanical Engineers as a member in 1930. He served the Society as a member of the meetings committee, 1947-1949; as chairman of that committee, 1952-1953; as a member of the Board of Technology, 1947-1948 and 1952-1955; as a member of the Organization Committee, 1950-1955, and chairman, 1954-1955; as a member of the Public Relations Committee, 1948-1949, and as

an advisory member of Executive Committee of Council, 1954 to date. Outside the Society he has served on many committees, and as vice-president, district 3, of the American Institute of Electrical Engineers, and as vice-president and president of the Illuminating Engineering Society. He is also an active member of The Engineering Foundation Board, serving as its chairman from 1953 to date. From 1950-1952 Mr. Barker was a member of the Committee on Technical Assistance of the International Relations Commission of the Engineers Joint Council. He is also a member of the ASCE and of the AIME.

"A registered professional engineer in the New York State since 1931, he is a member of the Newcomen Society of England; The Engineers' Club, New York; The Century Association, New York; the University Club, New York; the Columbia University Club, New York; the Westchester Country Club, Rye, N.Y.; and the Cosmos Club of Washington, D.C. He is a member of the advisory committee of the Chase Manhattan Bank, Grand Central Branch, and a director of National Malleable and Steel Castings Company. He has been a member of the Committee of the United States Coast Guard Academy since 1934 and served as its chairman from 1953-1955. He served as a member of the board of trustees of the Educational Testing Service for a five-year term. During the full term he was chairman of the Finance Committee and a member of the Executive Committee. He was also a member of the Board of Directors of the Dorr Company, 1952-1954. He has just completed a term as chairman of The Scientific Research Society of America. As a representative of the United States, Mr. Barker attended the Organization for European Economic Cooperation Conference on Research Administration held at the University of Nancy, France, in 1954. At this Conference he was a speaker on the subject of university patents and acted as a consultant to the Office for European Economic Cooperation. Mr. Barker is a member of Sigma Xi, Tau Beta Pi, Theta Tau, and Phi Kappa Sigma. He is a vestryman of Trinity Church, New York City, and chairman of their Committee on Fabric of the Church and its Chapels. He received honorary degrees of doctor of engineering from Case School of Applied Science in 1942 and the University of Rochester in 1944; doctor of laws from Bucknell University in 1940 and Union College in 1944; doctor of science from Northeastern University in 1940 and Ripon College in 1953; and doctor of humane letters from Muhlenberg College in 1945. He was presented the Navy Distinguished Civilian Service Award in 1945." What a tremendous record, and on top of that he is a very good golfer!

Your Secretary just recently returned from a trip to Switzerland; Ralph Davies mentioned that he wouldn't be at the Reunion because he would be out of the country at that time; Maurice Holland indicated that he would be in Europe on an assignment at the time of the Reunion.

That winds it up for another month. Hope all of you are well and that if we didn't see you at this Reunion we will at

the next one. All best wishes. — RALPH A. FLETCHER, *Secretary*, P.O. Box 71, West Chelmsford, Mass. HAROLD F. DODGE, *Assistant Secretary*, Bell Telephone Labs., Inc., 463 West Street, New York, N.Y.

• 1917 •

Ken Bell took time out during his recent trip to Europe to send us the following report: "We have had a fine trip so far, although we had the roughest crossing the *Independence* has ever made — 30-foot waves and force 8-9 winds — and these are not Bell exaggerations, but the statements of the first officer, who sat at our table. We ate every meal, however, and danced every night. I would not have missed seeing those waves for anything. We were cold in Italy though it was warm in Rome, and we loved Venice, but were driven in by the cold several times — and I had a sharkskin suit — double breasted, with vest; gabardine jacket; sweater; and top coat. We viewed the beautiful things from Pompei at the National Museum in Naples, after revisiting Pompei, itself; enjoyed going around Rome, and photographing fountains — but did scramble all over the Colosseum; walked over the immense baths of Caracalla; and went to the catacombs. We spent a day in Perugia — had to go there by train, as the road was closed by snow; the 13th century town hall is notable, and has a wonderful and well arranged museum, with Perugia, etc. We shopped in Florence, visited the world famous Archeological Museum; went all over the Palazzo Vecchio, and saw the Medici's treasure rooms; went through the Bargello, often went over Ponte Vecchio. We took it easy in Milan — walked all over the roof of the Cathedral and admired the wonderful marble statues and marble lacework; went to the zoo, and attended La Scala Ballet in the evening. Venice intrigued us; the so obviously ancient St. Mark's is charming; we scrambled all over the balcony where the four horses were taken through the Doges Palace; prisons and over the Bridge of Sighs. Yes, we had a gondola ride — several in fact. The standard tourist gyp is to take you to your hotel in a private gondola — at \$2.00 a clip. But, to cross a canal, often standing up, costs only two cents. Yesterday, we returned to Rome and today we flew here (Athens)."

Bill McAdams writes: "Our youngest daughter, Katharine Patricia, was married in December, 1954, at Alexandria, Va., to Private Walter J. Trowbridge, U. S. Army, of Sheboygan Falls, Wisc. They are now in France, and he expects to be discharged this summer. Our daughter, Barbara, Mrs. N. Landon Hoyt, III, lives in Winnetka, Ill., and has two boys and a girl. Our daughter, Nancy, Mrs. Kenneth E. Brown, lives in Newton Centre and has a boy and a girl. This January my wife and I enjoyed a vacation between terms at Key West, Fla. I am teaching Heat Transfer in the Chemical Engineering Department at M.I.T., and am enjoying using the third edition of *Heat Transmission*, which came out in the summer of 1954. This summer we plan to visit Bermuda."

From John Holton: "This is quite an idea of passing on to the various Class

members your jobs of making Class Notes! But I think it's a good idea. I don't remember exactly when you last had any comments concerning my activities, but I will try and pick up as of the middle of summer, last year. After only about a year and a half in charge of Carrier Corporation's Unitary Equipment Division, one of the four operating divisions after we verticalized along product lines, I was transferred to the staff organization to head up the Planning Division. I guess nearly 30 years with the company, in almost all branches of its activities, gave me a background which they thought might be helpful in long-range corporate planning. In any event, we function as an advisory group to general management, coordinating the long-range planning of the various operating divisions and our new acquisitions. Currently, we have two departments — one having to do with facilities planning and the other with distribution planning and business research. It is fascinating work; and while there are many 'crash' assignments, the continuous pressure that exists in an operating group is lessened in this work. Looking ahead to retirement within about four years, this is a welcome relief. My older son, John, Jr., a chemical engineering graduate from Yale under Barney Dodge '17, has four children and is general manager of the Gallowhur Chemical Company of Ossining, N.Y. My older daughter, Mary H. Soderberg, is married to another chemical engineer working for Monsanto, and has three children. Our youngest, a pair of twins, are now juniors: Robert P., taking Course X in the Class of '57, is struggling through M.I.T.; and much to my surprise and delight, last year he was a student with 'Doc' Lewis, who taught me much that I know a good 40 years ago; and Nancy P., who has just been elected president of the Student Government Association at Mt. Holyoke College. All in all, we have had a very happy and delightful family. We spend our summers at a camp on beautiful Skeneateles Lake, only about 22 miles from the office; and this year, we enjoyed a fine winter vacation at Casey Key in Nokomis. My latest hobby was promoted by my daughter Mary, who sent me one of these oil painting kits which awakened an unknown and apparently latent interest in painting. However, we do not expect to be known as 'Grandpa Moses.' June of 1957 is going to be unusually busy, with Bob graduating from M.I.T., my 40th Reunion, and daughter Nancy graduating from Mt. Holyoke. Just how we are going to handle all of these activities hasn't yet been figured out."

Walt Beadle: "With the skiing season behind us we are now looking forward to cruising on Chesapeake Bay in our 32-foot auxiliary sloop *Snow Goose* which we base at Oxford, Md., on the Eastern Shore. We hope to start sailing this year in the middle of April. The sloop, designed by Rhodes and built in Holland, was delivered last summer and is the first real boat that we have owned. It is small enough so that Christine and I can cruise on it ourselves without any professional help and yet it is large enough so that we can take another couple with us. Our three children are married and currently

living in Boston, New York, and Chicago, respectively. Our extra-curricular activities help to tie the family together. Last summer our son and his wife cruised with us for a week and last fall our older daughter and her husband also spent a week with us on the Chesapeake. Between Christmas and New Year's our younger daughter and her husband spent a week with us skiing in Canada. Our two grandsons are only two years old so they are not yet far enough along to join us in skiing or sailing. I am in the same job that I have occupied for the last eight years as a member of the Executive Committee of E. I. du Pont de Nemours and Company. This, together with my activities on the M.I.T. Corporation and in a few other organizations, doesn't leave me with much idle time except when I take a real break and go skiing or sailing. We plan to take an extra break this summer and motor on the West Coast for six weeks. We acquired *Snow Goose* last year with the definite objective of getting set for my retirement which I hope will be possible a couple of years hence while we are still young enough to cruise as far afield as Maine or the Caribbean." — R. S. STEVENS, *Secretary*, c/o Arthur D. Little, Inc., 30 Memorial Drive, Cambridge 42, Mass. W. I. McNEILL, *Assistant Secretary*, 270 Park Avenue (5A), New York, N.Y.

• 1918 •

The spores of information, floating in on the breezes of spring, bring tidings of George Sackett who has grown bigger since graduation in more ways than one. *Armstrong Tire News* of West Haven, Conn., reports that George has been appointed director of repair material development, thus brewing an unusually logical distillate from his thesis on vulcanizing, way back when. He will now be responsible for all types of camelback, not to be confused, they tell me, with the back of a camel. His will be the development, from formulae to standards of quality in manufacture, of compounds for repair material. And to make the assignment come full circle, he will contact customers in the field (meaning people under roofs which are fouled with industrial smoke and grime), as well as offering dealers the lucid radiance of his professional skill on matters concerning the use of said materials. George has been in the rubber industry for 33 years. Prior to Armstrong, he worked for Goodyear Tire and Rubber Company's repair material development department. He is a member of the American Chemical Society, the Akron and Connecticut Rubber Groups, and has contributed several papers on rubber chemistry to the American Chemical Society. He has served as a member of the Crude Rubber Committee of the American Chemical Society and is presently chairman of the Rubber Manufacturers Association Technical Committee, and chairman of the Tire and Rim Ordnance Advisory Tire Reconditioning Committee.

Leo A. McNally whose student daydream was to become an architect, has given 18 years of his active life to the city of Fall River as superintendent of public school buildings and grounds. Now he has asked to be retired; for reasons of

health it says on the spore from the Fall River *Herald News* which has landed atop our desk. During his undeviating mission of public service he says he has seen 18 or 19 four-room school houses abolished, to be replaced by proud structures of greater capacity. Instead of staying on in the ivy covered halls of learnings, in 1917 he enlisted in the aviation branch of the U.S. Navy and was a member of the first class of Navy pilots in this country, receiving his training in Akron, Ohio. He served with balloon reconnaissance in coastal areas overseas, in England, Ireland and France. After World War I, he was an assistant architect with the Boston Elevated Street Railway, and later worked with the McNally Construction Company, and P. J. McNally and Sons from 1928 to 1932. He was resident engineer for the Department of the Interior for three years. He did architectural work for Maginnis and Walsh of Boston from 1936 to 1938, when he received the appointment to the superintendency of school buildings. Married to the former Emma Barlow, he and his wife are the parents of two daughters, Mary A. McNally of Los Angeles, Calif., and Mrs. Thomas Peek of Oakland, Calif., and six sons, Leo A. Jr. of Fall River, Eugene J. and John M. of Syracuse, N.Y., Gerald N. of Tucson, Ariz., Brendon B. of Fall River, and Lt. Joseph J. McNally, U.S.N., stationed at the Atsugi Air Force Base, Japan.

By the very nature of the responsibility, a Class Secretary seldom says much about himself; a proper requirement which I have mostly observed in the quarter century these notes have trickled down my quill. (I ghost wrote them for a long spell.) Being in the middle of a speaking tour arranged by the University of Kansas is my present excuse. By May I shall have delivered fifty-six lectures in five different states. Carolyn and I left home March 14, spending the next day with one of my industrial clients in Massachusetts. The big snow hit us on the Pennsylvania Turnpike which was also icy and obscured by fog. We saw eight wrecks in 200 miles (not counting cars off the road) and two big trailers turned over. Apparently Pennsylvania doesn't have sand, for there were cinders on the road. A dirtier mess could hardly be brewed; black and pervasive. But to drive 600 miles from Philadelphia to the edge of Indiana, with neither grade crossing nor traffic light, is really something. In Milwaukee I had one of the most disturbing audiences I have ever faced: 1200 high school kids who were emotionally dead. In Kansas City we had exactly the opposite experience. They were wonderful! But the college students are always the best audience from my point of view. In Joplin, Mo., the sociology professor sat in the front of the auditorium with his seeing-eye dog. At the close of the lecture even the dog wagged his tail! Added to the student enthusiasm, that was a real thrill. We have criss-crossed Kansas and are now in Oklahoma. Some impressions which beg to be shared are: the radio produces the same tunes, the same soap operas, some of the same news casts as in New England; better roads are being built everywhere; we never seem to be be-

yond the sound of a train whistle; a club in Reno, Nevada, starts to advertise on roadside billboards in eastern Kansas; instead of skunks colliding with automobiles, it is jack rabbits out here; there are more Cadillacs in the middle west than in Massachusetts (who says the farmers are having a tough time?); New England weather isn't so changeable after all . . . it can go from 85 degrees at noon to 39 degrees at night in Kansas during April. We have been in dust storms with visibility no more than 50 feet; experienced the pounding of one and one-quarter inch hail stones in a 57 mile wind; slept between two tornadoes. It is a surprising experience to drive into a city and find your picture in the local paper, but a much more rewarding one to meet college presidents and lawyers who have driven miles to hear you speak because they have read and liked some book you wrote. On the side I am doing something with architects here and there for one of my industrial clients. Mrs. Wills will be glad to know that every one of them has heard of our Royal Barry. He's got himself a reputation for sure. — F. ALEXANDER MAGOUN, *Secretary*, Jaffrey, N.H.

• 1919 •

It was good to hear from Speedy Quick this month. He wrote from Birmingham, Ala., that he is "still purchasing engineer for Shook and Fletcher Supply Company, who in addition to selling and installing J. M. insulation products and Carrier air conditioning, sell electrical apparatus and supplies and also mine 1 million \pm tons of brown ore yearly." Speedy has two children assorted and one grandson thanks to his boy and his wife whom he married while in the Air Force in Newfoundland. He doesn't see Classmates. Lobdell invited him about two years ago for M.I.T. Alumni Dinner.

Ed Sherman dropped us a line to say that he had moved from Boston, Mass., "downeast" to Gorham, Me., at 126 South Street.

Dick Holmgren writes that he is still general manager and chief engineer of the San Diego County Water Authority "and extremely busy with the tremendous expansion taking place in Southern California. Just starting engineering studies of a second aqueduct to cost \$30 million. I don't believe there is any Classmate in this area. I would sure like to have anyone travelling here call me up."

Margaret Pierson Olfene writes that she has transferred her attention from the area of science to "that science which is concerned with people and their rehabilitation or even physical and personal well-being. I am enjoying my work as social worker with the Massachusetts Department of Public Welfare attached to Tewksbury, the state hospital for the chronically ill and aging."

Your Secretary visited with Ark Richards last month and it was sure good to see him. Ark saw Al Richards some time ago and said he was doing well.

George McCarten, we understand through his sister, is getting along fine having spent a good part of February in the sunny Phoenix, Ariz., area.

We have had word that William Osgood has left Chicago for Renssalaer

Polytech Institute, Department of Mechanics, Troy, N.Y.

We are in the midst of plans for a Class Dinner on April 25 to be held at the new M.I.T. Club here in New York at the Hotel Chatham. We will report this occasion in the next issue. Incidentally, whenever any of you are in the New York area, be sure to drop in at the Club. It's now a live, going concern and you're bound to run into some of your old "side-kicks." — E. R. SMOLEY, *Secretary*, 385 Madison Avenue, New York, N.Y.

• 1920 •

I have belated information on the death of Rear Admiral Claude Kell of Hinsdale, Ill. He died some months ago. He was recently connected with Goodman Manufacturing Company of Chicago.

Oscar Young, formerly president of the Lehigh Valley Transit Company, Allentown, Pa., is now with Ebasco Service, New York City. Will Boyer has left San Antonio, Texas, and is now in Albuquerque, N.M. Charles J. Clark has moved from Merion, Pa., to Malvern, Buz Burroughs, the distinguished chairman of our 20th Reunion Committee, has joined the ranks of the ex-urbanites. His new address is 104 Pinewood Gardens, Hartsdale, N.Y.

Perk Bugbee was honored early in April by his associates for having attained 35 years of service with the National Fire Protection Association. Perk got back from a winter vacation in Sarasota just in time to receive this honor. As general manager of the association, he is generally regarded as the leading authority on fire prevention in this country. — HAROLD BUGBEE, *Secretary*, 7 Dartmouth Street, Winchester, Mass.

• 1921 •

It's here! Our gala 35th Reunion opens on June 8 at the Sheldon House, Pine Orchard, Conn., and continues there through June 10, when we will all proceed to Cambridge for the big annual gathering of the Class of 1921, always held on Alumni Day, coming this year on June 11. If you haven't made all arrangements to be present and to join in these festive events, better get busy right away and wire or phone for reservations. For the 1921 Reunion, contact General Chairman Melvin R. Jenney, in care of Kenway, Jenney, Witter and Hildreth, 24 School Street, Boston 8, Mass., or Edwin T. Steffian, Architect, 11 Beacon Street, Boston 8, Mass. For Alumni Day reservations, get in touch with the office of the Alumni Association at the Institute.

Mel Jenney has kept the wires hot, letting us know about the readiness of the unmatched facilities of the Pine Orchard beauty spot to provide for our every convenience and all the enjoyment which it offers for vigorous or more relaxing activities. Whether you come by car, train, plane or join Cap'n Irv Jakobson's yachting fleet and sail right up to the lovely sheltered harbor at the Sheldon House, you will find a royal welcome marking the happy occasion of your arrival. Every one of us wants to see you and have you back with the old gang for this special occasion when we have the opportunity to meet and live with

each other for a few days and once more experience the fun and good fellowship which forged the firm bonds of friendship that so firmly united the Class of 1921 in those memorable times back on the banks of the Charles. Regardless of whether you're a "frosh" or an "old grad" at this reuniting, you'll find the same hearty greeting from the swell bunch, representing every course, activity, club and organization, who have helped to make these reunions such memorable occasions. Whether it's golf, tennis, swimming, sailing or the less rigorous lounging on the spacious lawns in view of Long Island Sound, you'll find plenty of good company and balmy spring weather for a most enjoyable break in your business routines. Come to the Reunion this year of all years — before it's too late!

Of course, you have received by now the third and final Reunion mailing and know what a monumental job that Mel and Ted and the others of the Reunion Committee — Jack Rule, Mich Bawden, Chick Kurth, Irv Jakobson and Bob Miller — have done for your pleasure. We hope you have completed and are returning the reservation request and we again sincerely ask that you also complete and return a copy of the information questionnaire for your Secretary's files, whether or not you intend to be present at the Reunion or at Alumni Day. As we prepare these notes, early in April, more than 110 classmates have signified that they are planning to come to Pine Orchard. To the several previously published lists of probable Reunion attenders are added the names of Harold O. Bixby II, Philip T. Coffin VI-A, Willard A. Emery II, Ralph E. Ferdinand XV, Alexander D. Harvey III, Sanford J. Hill X, Dugald C. Jackson, Jr. VI-A, Donald B. McGuire VI, Grant L. Miner I, Lewis W. Moss XV, Charles F. Parker XIII, J. Trevor Peirce XV, Victor S. Phaneuf II, George W. Pollock XV, Harry M. Ramsay XV, Herbert W. Reinhard XV, George E. Shoemaker VI, John J. Winn, Jr. X and A. Royal Wood VI-A. The list of attenders includes men from coast to coast and top to bottom of the continental U.S.A., as well as residents of Cuba and Hawaii. Won't you come the shorter distance you'll have to travel to meet these fellows who have really gone a long way to see you?

Course VI-A is still leading in percentage of living members attending, with 13 or almost 50 per cent. In total numbers, Course XV leads with 24, Course X has 19, Course II counts 14, Course I tallies 10, Course VI now stands at 9, Jake's sailors in Course XIII number exactly 6 and the balance includes Course XII with 5; Course III, 4; Courses V and IX, 3 each; and Course IV, 1.

With the changes in Technology's program, placing all Alumni Day events on campus this year for the first time, the Class of 1921 will gather on three occasions that day, along with wives, families and guests. At noon, we will all sit together for the buffet luncheon in Du Pont Court. We will meet again at the designated location for the Class of 1921 at the grand cocktail party which precedes the evening banquet. Finally, we will all sit together at the Class tables for the

barbecue repast, to be held in the John Rockwell Cage. These three get-togethers will this year replace the hotel reception of previous years. Look for the group at the places indicated on June 11.

It is good to know that we will be able to congratulate Augustus B. Kinzel in person as he joins William J. Sherry in attending the Reunion. Gus is a newly-elected Alumni Term Member of the Corporation of M.I.T. and Bill was elected to that distinguished post two years ago.

Samuel E. Lunden, architect, Los Angeles, Calif., is in the national news spotlight for proposing a series of conveyor belts, carrying six-passenger cars at a height of 15 feet above street level, as a solution to the city's transportation problem in the congested downtown areas. Known as a "carveyor," the system is said to carry 14,000 people an hour at a 15 mile-an-hour speed, slowing to 1½ miles per hour at each station for passengers to alight on a platform moving at the same speed. And in the East, Gotham-on-the-Subway has finally disposed of the last vestige of its elevated! Also in Los Angeles is Robert B. P. Crawford, Commander, U.S.N.R., engaged in material management with the local office of the Inspector of Naval Material. Once a development engineer for the Research Corporation and later director of research with the Standard Steel Corporation, he has some 50 patents and is vice-president of Buildice, Inc., joint patent research development with Minneapolis Honeywell Regulator Company. He and Mrs. Crawford have four daughters. Barbara and Diana attended the University of Georgia; Roanna is in high school and Marlene in grade school.

News of the Junior League of the Class includes the announcement by Mr. and Mrs. Sanford J. Hill of Wilmington, Del., of the engagement of their daughter, Margaret Velma, to Pfc. James R. Hodges, M.I.T. '51, of Birmingham, Mich. Margaret, Wellesley '55, is studying for the master's degree at the University of Delaware. San, of the famous "3-H" group in Course X in our undergraduate days (Hawes, Hayward and Hill) is a member of the legal department of E. I. du Pont de Nemours and Company, Wilmington, where he has been located since 1922. A member of the American Chemical Society and the Du Pont Country Club, San is planning to be with us at Pine Orchard to join the other two members of the 3-H Club.

In recent correspondence with our boss, Editor Bev Dudley '35 of *The Review*, we learned of the recent illness of our old brass-pounding side-kick of IXM, Harold O. Bixby, and we are now glad to report two cheerful messages, one direct from Bix and the other through Bev. Bix has been in Nassau and says he is still convalescing, slowly but steadily, and will definitely be present at the Reunion. He heads the H. O. Bixby Associates, electronic consultants of 238 Main Street, Cambridge 42, Mass., and is a senior member of the Institute of Radio Engineers, a member of the M.I.T. Faculty, Army and Navy and Harvard Clubs. He and Mrs. Bixby have a married daughter, Barbara, who attended

Arlington Hall and was a Wac in World War II, and a son, Richard, a graduate of St. Johns and the University of Pennsylvania Law School, who was a Marine sergeant in the war. There are six grandchildren.

Sam E. Moreton, Jr., President and manager of the Central Lumber Company, Brookhaven, Miss., has just written that he must change his original plan to be with us this month. Sam is active as president of the Mississippi Forestry Association and has served on the National Resources Committee of the Chamber of Commerce of the U.S. His company has turned from lumber fabrication to the development of the land and growing of new timber. He has been in Boy Scout work since 1926 and is a member of the Lions Club. He was a lieutenant in the Navy during World War II. Sam and Mrs. Moreton have three children and four grandchildren. Daughter Janis attended the University of Wisconsin, Charles went to Georgia Tech and James to Mississippi State. Sam's kind words for the work of the Class officers are appreciated.

Harold H. Cake is executive vice-president of the Equitable Savings and Loan Association of Portland, Ore., and president of the Portland Mortgage Company. Formerly vice-president of J. E. Haseltine and Company, distributor of industrial supplies, Cookie is chairman of the local section of the American Institute of Electrical Engineers, local president and national vice-president of the National Association of Purchasing Agents, member of Rotary and a director of the Volunteers of America, the Portland Rehabilitation Center and the Gabel Country Day School. His clubs include Multnomah Athletic Club and Waverly Country Club. Daughter Susan is in grade school. Cookie says he sees Bill Matthews, a brother Hexalpha from Spokane, Wash.

Dr. Thomas P. Campbell is manager of Improvements and Parks of the City and County of Denver, Colo. Herbert C. DeStaebler, Vice-president in charge of purchasing and traffic for the Lambert Pharmacal Company Division of the Lambert Company, has left the St. Louis area and reports an address in New York City. Dr. Ricardo Granillo gives his address as Sindicalismo 54, Mexico City 13, Mexico. Harold A. Greenwald, Project Engineer for Airesearch Manufacturing Company, has a new home address at 1959 Mandeville Canyon Road, Los Angeles 49, Calif. Colonel George W. Outland has retired after 35 years of Army duty and is making his home in Orlando, Fla.

It is with profound sorrow that we record the passing of Paul Bernard Wendler of Haverford, Pa., on December 29, 1955, and express sincere sympathy to his family on behalf of the entire Class. Born on June 4, 1898, in Dayton, Ohio, he prepared for Technology at Kenyon College and joined us in the Freshman year. A member of Delta Tau Delta, the Aero Club, Corporation XV and the Musical Clubs, he was graduated with us in Course XV. At the time of his death, he was chief engineer and a director of Joseph Bancroft and Sons Company, Wilmington, Del.

Through the courtesy of Mr. H. S. Conrad, Vice-president and general manager of the Stackpole Carbon Company, St. Marys, Pa., we are able to present a more complete account of the passing of Vernon Heber Sanders, reported in the April Review, who became associated with the Stackpole Company in 1921 and died on September 28, 1952, after thirty-one years of continuous service. He was born in Rico, Colo., on October 7, 1898, and was graduated from the Durango, Colo., high school, where he was president of his class in both the Junior and Senior years and salutatorian at graduation. He attended the University of Colorado, where he starred in basketball and track, winning letters for the quarter mile and relay. He served in World War I. He was president of Kappa Sigma and had been elected to membership in Alpha Chi Sigma and Tau Beta Pi. He was graduated with high honors in 1920, when he received the bachelor's degree in chemical engineering. He then entered the Institute, where he received his S.M. degree with us in Course X. Joining the Stackpole Carbon Company, he helped design and build the first continuous type of graphitizing furnace, a patented device different from the Acheson batch type unit, and one which is still in use. He then developed a complete line of metal graphite brush grades and continued in research and development, becoming chief engineer and then manager of research and engineering, the position he held at the time of his death. A brilliant man and able executive, his contributions were an important factor in the successful growth and expansion of the company. He was an honorary life member of St. Marys Lodge of Elks. He lost his life in a fire that partially consumed his home in St. Marys. He is survived by his wife, Ruth Searcy Ironside; two stepsons, Ronald Ironside, an electrical engineer in Philadelphia, and Donald Ironside, a teacher in Ithaca, N.Y.; and a brother in Texas.

Frantic Rush Department: Come on over to the Sheldon House, Pine Orchard, Conn., right away and stay with us on June 8, 9, and 10 and in Cambridge on June 11. Please complete that questionnaire form if you haven't already done so and mail it as soon as possible to your Secretary. Many thanks. See you at the Reunion! — CAROLE A. CLARKE, *Secretary*, Federal Telephone and Radio Company, 100 Kingsland Road, Clifton, N.J.

• 1922 •

Co-chairmen Parke Appel and Dale Spoor of the 1957 35th Reunion Committee report as follows with respect to the first 248 ballots received in reply to the inquiries sent out to ascertain the Class's wishes. 1. I plan to attend the 35th Reunion. Yes — 135 No — 34. 2. I hope to attend but am not sure at this time — 84. 3. I prefer to keep it a stag affair. Yes — 128 No — 50. 4. But if wives are invited, I'll come alone. — 47 With wife — 104. 5. I prefer to invite our wives. Yes — 69 No — 63. 6. But if the majority want it stag I'll come anyway. Yes — 130 No. — 2. 7. I am satisfied to have it at Pine Orchard. Yes — 177 No — 6. 8. If larger accommodations are required else-

where, I suggest: 6 — Nearer Boston, 3 — Griswold, New London 4 — M.I.T. Campus, 4 — Oyster Harbors. 9. I suggest we add the following activity to the Reunion; Bridge Tournament — Sailing — Shore Dinner — Style Show — Dance (the last two in anticipation of a mixed party). 10. I want to receive further Reunion notices. Yes — 213 No — 24.

You have already heard from Ray Rundlett giving returns to March 27 which totals are only slightly increased by the above figures. The general policy of the committee is to plan a Reunion which will draw the largest number of classmates. But whether that means a stag or with wives Reunion had not been determined at the time of writing these notes. The larger than usual indicated attendance clearly shows that the committee must make a very careful study of the returns and possible alternative hotels before a final decision can be reached.

Platt C. Benedict is on the move again. This time he has gone from Jerome, Arizona to Nababeep, Cape Province, Union of South Africa to help superintend the fortunes of the Oiokiep Copper Company. Oscar Horovitz has been appointed an honorary fellow of the Institute of Amateur Cinematographers. This group holds an international film competition each year and the 1955 results showed that in the 16mm group Oscar's film "Rio de Janeiro" won 2d prize and "Belo Horizonte" was "commended."

As of March 31, 1956 the Class has contributed to the Alumni Fund \$29,337.59. This came from 245 contributors. We lead all of the classes in total contributions, our nearest competitor being 1923 with \$26,079.65. — C. YARDLEY CHITTICK, *Secretary*, 41 Tremont Street, Boston, Mass. WHITWORTH FERGUSON, *Assistant Secretary*, 333 Ellicott Street, Buffalo, N.Y.

• 1923 •

Walter E. Richards (XVI), Col. USAF Ret., sent in a resume of his activities since leaving the Institute and thereby sets a fine example for the rest of you. It seems that he has been in the Army and the Air Force much of the time since 1910, when his starting remuneration was \$180 a year. He took various leaves of absence to complete studies at the Institute, the Air Force Engineering School, Dayton, Ohio, and other seats of learning in this country and abroad. He retired with the rank of colonel on June 30, 1946. Along the way he managed to accumulate over 5,000 pilot hours in 22 years of flying, having flown over or landed in every state in the U.S.A. and having been on every continent in the world. He served as special Air Force representative at many plants engaged in the manufacture of war materials. He was commanding officer at many Air Force bases, particularly in New England. He received a number of decorations. Presently, he is enjoying the salubrious climate of San Francisco. The list of associations, clubs, fraternal organizations and societies to which he belongs measures 28 inches, single-spaced, standard typewriter (hope somebody else pays the dues!). His hobbies

and interests involve almost everything except ham radio. Congratulations!

A new book, *The Gateway to a Nation* has just been published — the author being no other than D. G. Brinton Thompson (XII). It is an interesting history of the Middle Atlantic States and their influence on the development of the Nation. Brinton is Northam Professor of History at Trinity College, Hartford, Conn. He also holds a Ph.D. degree from Columbia, received in 1945. His *Ruggles of New York* was issued the same year.

Percy Paul (Pete) Pratt (XV), passed away April 4 at the United Hospital in Port Chester, N.Y. He was assistant vice-president and chief engineer of General Foods Corporation in White Plains, N.Y. He traveled extensively, both in this country and abroad, making trips to Europe, South Africa and Japan. He was a veteran of both World Wars, serving with the Navy in the first and in the Army as a Lt. Colonel in the second. He was a member of the American Society of Mechanical Engineers, the University Club of White Plains, White Plains Lodge No. 473 F. and A.M., the M.I.T. Alumni Club of Westchester, Delta Chi Fraternity and the American Legion. He leaves his wife, Mrs. Frances Cabell Pratt of 2 Overlook Road, White Plains, N.Y., two sons, two daughters, his mother and a sister. We shall miss him.

As a former World War I pilot, your Secretary attended the Annual Meeting of the Aviators' Post No. 743, American Legion, at the Waldorf-Astoria Hotel, April 11, at which time the William E. Mitchell Award was presented to General Nathan F. Twining, Chief of the Air Force. The list of aviation notables and heroes attending was most impressive. In mufti, they look no different from you or me but in accomplishments their record is unsurpassed. We could paraphrase Winston Churchill and say, "Never have so many owed so much to so few." — HOWARD F. RUSSELL, *Secretary*, Improved Risk Mutuals, 15 No. Broadway, White Plains, N.Y. WENTWORTH T. HOWLAND, *Assistant Secretary*, 1771 Washington Street, Auburndale 66, Mass.

• 1924 •

When we mention a visitor from the West Coast the chances are 99 to 100 it's either Bill MacCallum or Phil Bates. A few weeks ago the long shot turned up in the person of Rockwell Hereford. Some of us like to think we haven't changed much since the spring of '24. Rock is the one who really hasn't. Didn't ask how his teeth were, but he still has his own hair and all of it, and he looks as though he could still do a few smart turns on the wrestling mat. Rock has just been given a new assignment with U. S. Steel, including among other things the production of a house organ. He took the opportunity, white East, to come to Cambridge to visit his son David, a student at, believe it or not, Harvard.

Latest report on the travels of chief engineer Simonds: he was in Haines, Alaska, "one of those places the Lord will recall on Judgment Day," on Easter Day. "Spring is here but it's still snowing." He should have been in Boston or New York! The Boston *Advertiser* car-

ried a squib in February, "Barrett Heads M.I.T. Fete." The fete, a celebration of the 50th year of the M.I.T. Catholic Club. Headlining the fete, Edward J. Hanley, steel magnate. The design of the much-publicized Texas Tower was, in large part, the work of one of your Classmates, Vincent K. Cates. An old Navy man (Seabees and Bureau of Yards and Docks), Vin must have been right in his element. When it was towed out to sea to be anchored Vin was on deck, not the deck of the tower, however, but of a palatial yacht that followed along behind.

Albert S. Anderson is an Ebasco man in New York, or rather working out of New York. He landed there after fourteen years in New Orleans, "the land of drip coffee, red beans and rice, creole gumbo and brown eyed Yvonnés." When he arrived in New York he found relaxation, among other things, as a stage-door Johnny at the Metropolitan Opera. Of course it's a bit late now to warn any of our few remaining bachelors, but the net result as of this writing is a 12 year old son who wants to be a doctor and a 6 year old daughter who is taking ballet lessons from her mother. Andy is a bit of a sailor and his family takes to water "like past Scandinavians should."

This information came in a round robin letter following one to him from Kaare Aass in Oslo. If Kaare had known Andy's middle name is Sigfrid there might have been a more personal touch. Evidently Kaare thinks we here have a few misconceptions about the Norwegian way of life. Although he admits that, to start for a winter trip in the hills they put on their skis in the garden, he does want us to know that "we don't meet polar bears and we do eat other things than reindeer and Norwegian sardines. All of you better take a look for yourselves." Interested in crafts work? Kaare evidently is. A plumbing and heating contractor, on the side he is president of both the Norwegian and Scandinavian handicrafts groups.

Berton Benjamin runs an oxygen and ambulance service in Stamford, Conn., and, during his spare time, a 100 acre cranberry bog in South Carver, Mass. He came to this after 22 years with Westinghouse. "If anyone at this stage of the game needs advice, I would suggest staying away from the large companies where you are a medium salary cog and find something you can own and operate yourself. Believe me you will make much more money and live longer and better." Under the "living better" head, Bunny sails on Long Island Sound, gets in a bit of duck hunting each fall, spends a month or so in Florida each winter. Sounds as though he'd proved his point.

Edward F. Britt did further work at a textile school after M.I.T., has been with Kennedy and Britt, Inc., a textile dyeing concern in Philadelphia ever since. He claims to have achieved his present position of president and manager "by longevity." Ed's letter went on to John W. Cannon. Since Gentleman Jack hasn't been heard from directly in lo, these many years, here's hoping this gets a response.

Admiral Felix B. Stump, upped from

Vice Admiral, is now Commander in Chief in the Pacific and of the U. S. Pacific Fleet. A few address changes, but no further information as yet to explain them: G. Wheeler has left Massachusetts for Troy, Ohio; Clarence Redden, after all these years down East, is now in Media, Pa.; Paul Keppler has deserted the beauties of California for New Orleans; and Bill Donovan, recently in Boston, has settled down the coast in Gloucester.

So much for now. We do well in the Alumni Fund so far, but still have a long way to go to match last year. Since you have already contributed, for Frank Shaw and myself, thanks. — HENRY B. KANE, Secretary, Room 1-272, M.I.T., Cambridge, 39, Mass.

• 1925 •

Many complimentary comments have been received regarding Ed Kussmaul's fine report of the Thirtieth Reunion. As noted in Fred Greer's President's letter, we have not sent this report to everyone. There are a few copies left, and any of you who are interested may receive one if you will drop a line to the Secretary. When you write for a copy, take a few seconds to tell the Secretary a little bit regarding your recent activities. There is one error in the report which certainly must be corrected. George McDaniel called from Borger, Texas, to say that the Southwestern group of 1925 Alumni were not asking that the Thirty-Fifth Reunion be held at Tucson, Ariz., as Ed had noted in his report but rather at Santa Fe, N.M. Several members of the Class were interested in this possibility, and why not consider the matter and send your thoughts on such a Reunion to one of the Class officers?

Address changes which have come in during the past month indicate that several of the Class have made moves involving considerable mileage recently. Henry R. Bodell, who has been at Hastings-on-Hudson, N.Y., for some years, has moved to Charlotte, N.C. Omar C. Hopkins, whose last address was San Carlos, Calif., is now with the American Embassy in New Delhi, India. Lloyd W. Irving has moved to Baltimore, Md., from Akron, Ohio. Rear Admiral Theodore C. Lonquest, who has been at Wright-Patterson Air Force Base in Ohio, is now located at Chevy Chase, Md., while Justin Peterson, whose last address was Swampscott, Mass., is now at Hendersonville, N.C.

It is with sorrow that we note the death of Philip G. Evans, a native of Cambridge, Mass., and former accountant for several paper companies and the U. S. Tariff Commission, who died early in March at his home in Dexter, N.Y. He had been employed for the past several years with the Car-Freshener Corporation in Watertown, N.Y. — F. L. FOSTER, Secretary, Room 5-105, M.I.T., Cambridge, Mass.

• 1926 •

Class Notes are not due until Friday but there's an awful good reason for writing them this Sunday morning April 8 — we are marooned at Pigeon Cove. With March having provided more than 50 inches of snow and here and there a

3
crocus showing it seemed as though a nice week end was assured. During the night it started blowing northeast and by 5 A.M. the blasts on our oceanside bedroom window were coming with sufficient fury to ruin any ideas of an extra Sunday morning nap. So up with the thermostat and on with the coffee and how fortunate for with the last sip of coffee the power lines failed. Now, sitting on a stool with my back to the fireplace and Heidi at my feet and a good supply of Edgeworth tobacco we are all set to write Class Notes. Note that I mentioned Heidi at my feet — our new St. Bernard was 6 months old last week and she already has developed the habit of coming over when I sit down and sitting not only at my feet but on them. I have not weighed her since the last issue of notes but my feet say she goes well over a hundred pounds. I'll insert the current weight if I can find a scale (110 lbs.). The wet snow is blasting in from the sea absolutely horizontal. The car is completely painted with a couple of inches of white stuff, windows and all and without chains the streets are treacherous. However, we have plenty of canned beans and dog food on hand so we are prepared to wait out the storm. (The dog doesn't like beans).

Now, let us see what we can tell you in the way of Class news. This is one of those rough months that comes around Reunion time. The notes will be published after Reunion so we can neither tell you about the coming Reunion or report about the Reunion that we have just had. We do have a news release about Wes Hemeon who has resigned from the Mellon Institute to form his own consulting firm in Pittsburgh to be known as Hemeon Associates. As most of us know, Wes has engaged in the field of Air Pollution for many years, first with the State of Massachusetts and for more than ten years with the Mellon Institute. The offices and laboratories of the new organization will be located at 121 Meyran Ave. in Pittsburgh. Our best wishes to Wes — we know that he will be successful in the new venture. Usually there's a tidy bit of news about some '26 man written on the back of an envelope in one of my pockets but this month we're clean. So unless the clipping services bring in something between now and Friday you will have to bear with us until the floodgates that come with Reunion bring in some news. With Pigeon Cove popping into our notes so frequently I am surprised to hear that members of other classes than '26 read our notes. I guess there must be a certain fascination in reading about a place — particularly a place by the sea. I recently read Professor Breed's notes of the class of '97 and I was fascinated by his stories about Camden, Me. Today some friends of ours in Rockport, John and Marge Chapman, (John was Class of '22) phoned to let us know that they had returned from a trip. They drove to New Orleans and took a United Fruit boat cruise to Havana and Guatemala. On the boat they met Walter Bagby '24 of Whiting, Ind., and when they told him they were from Rockport he knew all about the place from reading the Class of '26 notes.

(Even though Mr. Bagby is one of Mr. Kane's Class Notes family). The electricity had not come on at Pigeon Cove by 2 P.M. so after frying some hot dogs over the fireplace we decided to take a chance on the drive home. We found the roads ploughed but electrical failures existed everywhere. The sticky snow plus high winds caused the trouble. A postcard has just arrived from Argo Landau announcing his new address 11 Conway Woods, R.R. 3, Box 471-B, Creve Coeur, Mo. — HEMPSTEAD 2-3931. Argo was building a new house so this indicates completion. Sorry we cannot be there for the house warming. The notes are being typed a few days after the bad storm and we can report that the snow is melting fast so by Reunion time we are sure it will have disappeared. Until July — Cherio. — GEORGE WARREN SMITH, *Secretary*, C/O E. I. du Pont de Nemours and Company, Inc., Elastomers Division, Room 325, 140 Federal Street, Boston 10, Mass.

• 1927 •

General Fritz Glantzberg's normal tour in Morocco will be up in August, 1956; but, very much at home in the Mediterranean area by now, he has requested a year's extension.

The far reaches of Fritz's 17th Air Force family continue to take up most of his time and have kept him on the road. With frequent trips to check on his bases, his face has become a familiar landmark in many parts of Italy, Turkey, Libya, Greece and Morocco. New mobility and flexibility have been provided with the addition of a T-33 to the Headquarters flight.

Although he hasn't yet been elected to the French Academy, he has acquired a good working knowledge of French, and has pretty much put his interpreter out of work. His speech in Italian during a recent party in Italy paralleled his French Bastille Day effort of last year. He is now studying Arabic and has astounded several visiting firemen by exchanging formal greetings with the local Arab guards.

Claire had the chance to get further afield this year. In addition to a motor trip through Spain, she managed to see something of Germany, Italy, Greece, Turkey and Libya, where she looked into Women's Club activities for Fritz. She also braved the rigors of a counselor's life at the Youth Camp at Sidi Slimane; junior members had a field day, but she returned exhausted. Kay, incidentally, is becoming quite an accomplished painter under the tutelage of one of the local maestros. The switch from the saddle to the easel seems all in the day's routine.

Fred joined the family in Africa after completing his Sophomore year at Georgia Tech, where he switched from Chemistry to Industrial Engineering. This year he became a motorcycle zealot and president of the local USAF Club (The African Asphalt Angels) who, sponsored by the Base PM, debated such local problems as when camels have the right of way. He returned to Tech this fall for his Junior year.

The above is extracted from the last issue of the Glantzberg Gazette, Yuletide

Edition. — JOSEPH S. HARRIS, *Secretary*, Shell Oil Company, Aviation Department, 50 West 50th Street, New York 20, N.Y.

• 1928 •

Clippings have been received that give big news about three of our prominent Classmates.

The Baltimore, Md., *News Post* for January 20 carried the announcement by Westinghouse Electric Corporation of personnel changes in which Bill Bendz was named as manager of the electronics division. Bill started out with Westinghouse and remained until May, 1948, then left to become chief engineer for Sperry Products, Inc., Danbury, Conn. According to our clipping, Bill plans to move his family to Baltimore where he will take up his new position. Our congratulations, Bill, on your appointment and best wishes for your continuing success!

A news item from the morning *Union* of Springfield, Mass., states that Leslie B. Cutler has voiced her intention of seeking nomination for lieutenant governor of Massachusetts at the Republican state convention in June provided that Lieutenant Governor Sumner G. Whittier is a candidate for governor and does not seek re-election to his present office.

Senator Cutler was a student in Course VII. She has served as selectman in the town of Needham and is a member of the Needham Board of Health. Extensive service in state affairs (ten years in the House, eight years in the Senate) provides excellent background of experience for the office she will seek.

We commend Senator Cutler for her long service in the public interest and look forward to her nomination and election as the state's first lady lieutenant governor!

Ben Miller (Dr. Benjamin F. Miller) has hit the news again. This time, according to the Fitchburg, Mass., *Sentinel*, Ben has just had a new book published, *The Complete Medical Guide*. The news item describes the book as a tremendous piece of work that has been twelve years in preparation. It covers all aspects of health and is entirely up to date. Here is your chance, mates, to get immediate benefit from one of our excellent Class doctors! Previous books that Ben has authored include *You and Your Doctor* and *When Doctors are Patients*. You may recall that Ben graduated in Course X-B then went to Harvard Medical School where he received his M.D.

Ben is now director of the May Institute for Medical Research at Cincinnati and associate professor at the University of Cincinnati Medical School. Before this he was senior associate physician, Peter Bent Brigham Hospital, Boston. — GEORGE I. CHATFIELD, *Secretary*, 49 Eton Road, Larchmont, N.Y. WALTER J. SMITH, *Assistant Secretary*, 15 Acorn Park, Cambridge, Mass.

• 1931 •

By the time these notes appear in The Review the 25th Reunion of the Class of 1931 will be a part of the Class history. It seems strange to be making predictions several months ahead, and that when they finally appear in print the event will

have occurred. Nevertheless, as you read these notes I'll predict that those of you who attended the Reunion will say that it was one happy weekend, and that you will look ahead to our 30th. Looking back, you will realize the tremendous effort involved and here is one way that you can help out five years hence. Many of you will have taken snapshots that would warrant a copy being sent to the Class Secretary. In preparing for this Reunion we found a remarkable shortage of pictures from previous Reunions, despite the fact that some excellent pictures were taken.

Since we were together, in the years '27-'31, members of the Class have moved forward to positions of responsibility in leading areas of private industry and public service. This is authenticated by the rich store of biographical data in the Class Book, published this month. It has been evident also in the work of the Reunion Committee and its 30 subcommittees whose most valuable experience, advice and services have been at the disposal of the Class. If you have not yet reserved your copy of this Class Book, write Edwin Worden, Box 71, Westport, Conn. — A. L. HESSELSCHWERDT, JR., *Secretary*, Room 1-125, M.I.T., Cambridge, Mass. GORDON SPEEDIE, *Assistant Secretary*, 22 Harvard Avenue, Medford, Mass.

• 1932 •

Our indefatigable Assistant Secretary, Rolf Eliassen, sends in the following notes from his vantage point at the Institute.

"Jim Robson is now manager of tire development and engineering for Firestone in Akron. He has a tremendous job on his hands developing new tires for so many industrial and commercial uses. Not the least of his jobs is designing the new tires for the 1957 cars which will use 14 inch rims. All of the dies and molds must be ready for the 1957 models before too long. Jim has two girls, 13 and 9, and is living country style on a large acreage about 12 miles from Akron. He wants any of our Classmates who come through Akron to look him up. Jim wrote that he ran into Ed Beck in Detroit at some technical meeting recently. Ed is chief production engineer of Sealed Power Corporation in Muskegon.

"John Loustaunau was in the office at the same time he was recruiting engineering personnel for his company, Bechtel Associates. John is supervising engineer in the New York office of Bechtel Associates and is in charge of work on the design of facilities for oil refineries and chemical plants. This is rather a far cry from his original work in electrical engineering, but his seven years with Gulf Oil Corporation at Port Arthur, Texas, followed by 12 years with E. B. Badger and Stone and Webster on design of various types of process plants, has equipped him well for his present responsible work which includes a force of up to 100 men. John has three boys and three girls in the age range from 16 down to 6. He lives in Cos Cob, Conn., having moved there recently from Winchester, Mass.

"E. Harold Anderson, a Classmate of

ours from Course VI-A, (mentioned in June '55 Notes), completed four years of service in the Signal Corps of the Army, then joined the L. E. Myers Company of 53 West Jackson Blvd., Chicago. His company has about 25 hundred field men installing sub-stations and power transmission lines for electric utilities in the entire area east of the Mississippi River. Harold is their electrical engineer and his responsibilities seem to lie with the contacting of electric utilities, estimating, cost accounting and any other administrative procedure which will help a big contractor make more money. He is living about 38 miles east of Chicago at Ogden Dunes, Ind., right by Lake Michigan. Sounds cold in winter but delightful in summer! He has two boys, 18 and 11, and a reserve commission as a Lt. Colonel in the Signal Corps to keep him busy while not traveling over the country on contracting work."

Maurice Cook writes from 153 South Long Beach Avenue, Freeport, N.Y.: "It has been a long time since I've received any news of my Classmates (Course IV-A). Is there any chance of a report by courses? For your information, I have been back in N.Y.C. since '46 as founder and president of Perfo Mat and Rubber Company, Inc. Married and have two girls (ages 12 and 11)."

Joe Eisler is a research section supervisor for Stanolind Oil and Gas Company in Tulsa, Okla. He has been with Stanolind for the past 20 years and is engaged in geophysical research there.

Edwyn Eddy, Berry Hill Road, Syosset, N.Y., is chief design engineer for Republic Aviation. He writes: "I am a director of the M.I.T. Alumni of Long Island, a new group that is growing quite well. Henry Duncan is on the board and has done a lot of work in developing the Club. I'm looking forward to seeing our Class at the 25th Reunion."

Howard F. Carver has been elected a vice-president of the Gleason Works, Rochester, N.Y.

Lawrence Littlefield is a casualty underwriter for Aetna, with offices in New York, and lives at 9 Morningside Avenue, Yonkers. He writes: "Interesting work. Broke into insurance field as a safety engineer after graduation. Have been with several larger companies. Spent two years in Florida, remainder in N.Y.C. Have three children. The oldest is 18, enters college next fall."

A news clipping from Attleboro tells that Dick Hall has been elected a director of the First National Bank there. Dick is general manager of the Automatic Machine Products Company and a director and treasurer Leavens Manufacturing Company.

Short notes from three: Joe Coffey, Jr., is central office equipment engineer for New England Telephone and Telegraph in Boston. Henry L. Braun is in the building contracting business with Braun Construction Company, Inc., specializing in commercial and industrial work. Johnny Graham is chief process engineer for Standard Vacuum Oil Company and lives at 165 Old Kings Highway No. in Darien, Conn. — ROBERT B. SEMPLE, *Secretary*, Box 111, Wyandotte, Mich. *Assistant Secretaries*: WILLIAM H.

BARKER, 45 Meredith Drive, Cranston, R.I., ROLF ELIASSEN, Room 1-138, M.I.T., Cambridge, Mass.

• 1934 •

John Hrones is on leave of absence from the Institute for six months, and has gone to Europe with his family. He has lectured in Athens, Istanbul and Rome and will lecture in Brussels. He is visiting various universities and laboratories, and is combining lecturing and visiting with seeing as much of Europe as he can. Aside from the countries already visited, he hopes to include Austria, France, Belgium, Scandinavia, Germany and the British Isles. We have a letter from John which follows:

"Athens, February 23: We sailed into Gibraltar at 1:00 P.M. on February 17 on a sunny warm day, the best so far. As we approached the harbor early in the morning we began to see numerous other ships, most of them heading as we were to Gibraltar but some on their way to Africa. The snow-capped mountains of southern Spain were the first land that we had set eyes on since sailing from New York. It was a welcome sight for all of us but especially for those who took the crossing with some difficulty. 'The Rock' presented a beautiful sight, and one could easily understand the importance of Gibraltar to the British in the days (not so long ago) when warfare was conducted on a considerably more modest scale than it is today. Even under the present circumstances I suspect it is very fortunate that the British control it. Six of our fellow passengers disembarked here as we were besieged by small boats selling cigarette lighters and souvenir scarfs. We hope that we have some excellent color slides as we had several unusual shots.

"After only one hour in port we sailed for Palermo 15 hours late because of the weather. We left Palermo at 1:00 P.M. and arrived in Naples at 10:00 P.M. On Monday everyone was on deck as we passed through the straits of Messina between Scylla and Charybdis. Mount Etna was visible only in outline due to the early morning white clouds. Tuesday morning the rocky mountains coast of Greece (Peloponnesus) came into view. Characteristic small white villages could be seen perched on the mountain sides and in the valleys.

"After some delay, we docked at 1:00 P.M., spying through our field glasses Nick Theophanopoulos at the dock. Nick had a pass to come on board and got us through customs in a very short time. We then waited in a café until our car was unloaded (with Chris and Nick). Finally we arrived at an attractive, five-room house which the Theophanopoulos had gotten for us in Kifissia, a suburb of Athens. It is much more spacious and comfortable than the original two-room hotel setup we expected, and incidentally, much cheaper. We have central heat which is just about up to keeping the house comfortable during the cooler days. Central heat is not common here, and there is a tendency to use it very sparingly where it exists.

"We met a number of interesting people on the boat: Howard Beale, Professor

of History at the University of Wisconsin, now writing a biography of Teddy Roosevelt. He has written the major reviews of Elting Morrison's *Letters of Theodore Roosevelt*. He is headed eventually to Munich but left the boat at Palermo with two sons in tow.

"Mrs. Perkins (Virginia Chase) the author of several books and a professor at Smith College. Her husband is with New Departure in Bristol, Conn. She is headed to Greece to work with the American Mission in Athens.

"A Mr. Helge, the newly appointed member of the U.N. Economics Board assigned to Greece for two years. Helge, married to a Greek woman, has spent five years in Greece and knows it very well. We learned a great deal about some of the problems which must be solved in this area from Helge.

"Professor Trahman of the University of Cincinnati, a classical scholar, excited about his first trip to Greece. He was a classmate of Don Campbell's at Union College.

"A number of Greek-Americans, some returning for a visit to their native land, others returning to spend their remaining years there. We saw a great deal of Mr. and Mrs. Frangedalis of Lewiston, Me. They took a great interest in the children, taught Janet, Mary and me some native Greek and Cretan folk dances and told us much about the Greek people.

"Two of last year's graduates of Smith College headed to Athens to look for jobs. Steve was willing to waive the gap of the years and dance with them when the opportunity offered. Incidentally there are no jobs available in Greece.

"The subject of the Greek elections scheduled for Sunday, February 19, was heavily discussed and many of the Greek-Americans were deeply concerned over the outcome. Most of them hoped that the party headed by Karamanlis would survive against the coalition group which included the Communists. Karamanlis's position has been weakened by the deteriorating U.S.-Greek relationship. The biggest factor causing major Greek resentment was the official reaction of the U.S. Government to the Turkish outbreaks against the Greek minority last September. The sending of identical notes to Turkey and Greece in this instance lost us many staunch friends that it will take time and effort to win back. There is some feeling against Dulles personally here.

"The returns on Monday established a victory for Karamanlis although he did not carry a majority of the vote. Karamanlis is relatively young (47), a former minister of roads who is apparently held in high regard by the King and many of the people. However, the road ahead for any Greek government is difficult. Relations with Turkey are at a low point. The Greek people of Cyprus are pressing for immediate self-government. The iron curtain is at their northern windows necessitating a large military force which is a drain on their already pinched economic situation. Their natural resources are extremely limited. The standard of living in villages is very low. The average annual income is \$250. The people have suffered greatly during the German oc-

cupation and during the guerrilla warfare which followed. The sudden devaluation of the drachma two years ago has developed a distrust of the Greek people themselves in their currency. Greek refugees from Turkey and some of the satellite countries have produced overcrowding of Athens and its environs. The job of feeding and clothing the eight million people of Greece leaves little time or money for the cultural activities which marked the Classical Age.

"Yet there are some bright spots in the clouds. Marshall funds (perhaps of the order of two billion dollars) have made major rebuilding possible. The agriculture group of the American Mission about which the Greeks are enthusiastic have helped raise the food output to twice the level ever achieved in the past. One of the noteworthy accomplishments has been the successful planting of rice in what were previously waste land areas. From no rice crop to a surplus rice crop has resulted in a few years. The indications are that some rice lands can now be converted to wheat which Greece must now import. Greece has undergone a phenomenal growth of her shipping industry, and Greeks tell me she is now the third ranking shipping nation.

"She has unrealized tourist trade possibilities to bring in many needed dollars.

"Her people are very loyal and hard-working. Sunoco Oil is prospecting for oil here, and the Greeks are hopeful of a local fuel supply. There is no coal here, but some large deposits of low grade lignite exist. There is little wood and all lumber is imported from Sweden. However, little wood is used. All houses are constructed of cement products made in Greece with liberal use of white marble from Mount Pentelikon from where the marble for the Parthenon was obtained." — WALTER MCKAY, *Secretary*, Room 33-211, M.I.T., Cambridge, Mass.

• 1935 •

In March you received a letter from the Class Agent relative to the Alumni fund and our 25th year gift. As you know, our objective is a scholarship fund with a goal of \$100,000. By this time you will have received the Class President's letter with further information about Class activities and the drive. The main thing to remember, however, is that all contributions to the M.I.T. fund should be designated "Class of 1935 Scholarship Fund" and that each of you who reads *The Review*, and therefore is a contributor, should make every effort to contact other '35 men and whip up interest.

Walter "Stocky" Stockmayer is on the editorial committee of the Annual Review of Physical Chemistry. Douglas F. Illian has been appointed director of research and development for the Tuttle and Kift, Inc. of Chicago, Ill. Alden Tower of 15 Wachusett Road, North Weymouth, recently completed 21 years with the Fore River Ship Yard as a Naval architect. Joseph Lempert of Elmira, N.Y., who has been associated with Westinghouse Electric for the past 19 years, was recently awarded the "Most Meritorious Award" for an improved image orthicon target. He developed a new tube with the help of one of his fellow employees. Norman

S. Kornetz has been appointed manager of engineering for the television-radio division of Westinghouse Electric Corporation. He joined Westinghouse after three years in the Army Signal Corps.

As I mentioned before, we have been receiving newsletters from Bill Weems who is in Korea with the U. N. Economic Coordinator. His letters are rather long to reprint in full, but are very interesting. I am reprinting the two following paragraphs at random which I think you may find interesting:

"At New Year's time I located a 'factory' where they make old-fashioned Korean candy, known as yot (rhymes with 'but'). This was a long-anticipated project because of the nostalgic childhood memories connected with yot. This stuff is made without sugar, as we usually know it, and can be eaten in large quantities without ill effects—in fact is considered to be beneficial. It is sold by peddlers on the street, pushing little carts (or carrying trays) and clanking enormous and loosely-assembled scissors to advertise their trade. The yot is always unwrapped and usually open to the dust of the street (and flies in season), so few Americans venture to taste of it. They miss a real treat, and may or may not avoid getting a horrible disease.

"The trip was a thrilling and sobering experience; my experiences in the Orient frequently make me wonder if we Americans will be equal to understanding and carrying out the unique role that history seems to have cast on us—and it makes one tremble to realize how little we really understand of what is going on—and of what our proper function is—and to realize that in large measure the course of events will be determined by factors beyond the control of one individual or even a nation, no matter how unified or sure of itself. The next thought is, of course, to realize how little the majority of Americans know or really care about this part of the world, and to wonder if we as a nation will succeed in making the necessary accommodations to the economic up-grading of the Orient." — FRANCIS W. MULDOWNEY, JR., *Secretary*, 1109 Boylston Street, Chestnut Hill 67, Mass.

• 1936 •

Al Horton, XV, dropped in from San Francisco the other day to report on his activities. He has been with Standard Oil of California since graduation. For the first ten years he carried on project engineering, working on the design and applied engineering departments of the company, designing such projects as the Cal-Tex refinery at Bahrain. In 1947 he was moved to the top echelons of Standard's engineering department, reviewing and co-ordinating the engineering plans for the company, seeing to it that the individual projects carried on by the parent company and each of its subsidiaries conformed to a uniform, progressive, overall pattern. In 1953 he was made secretary-treasurer of the Oronite Chemical Company, one of Standard's autonomous subsidiaries. Al's work is mostly in the financial and budgeting end as part of system planning for Oronite. Now that the company has set up operations in other parts of the world, Al expects to be back East more often. Shortly after his

arrival in California he married Gabriella Dietert and they now have three children, Pamela, Gaby and Carolyn.

An article in the Autumn 1955, Harvard Business School *Bulletin* tells of the doings of Roman I. Ulans, VI, a Regular Army lieutenant colonel in the Signal Corps. Ulans now not only serves as an instructor at the Army Supply Management Course School at Harvard Business School but in addition, he has been the means by which the course has duplicated itself, for Ulans has played a major role in the creation of a similar case method training program for the South Korean Army which gets underway this winter.

John Bete, II, writes in, in his capacity as president of Bete Fog Nozzle, Inc. of Greenfield, Mass., that after working at various engineering type jobs he started his fog nozzle business in 1950. It is a small but growing company primarily supplying the needs of large industries for fog and spray equipment (fire protection, industrial processing, etc.). The work is interesting as he is continually developing new products for hundreds of varied applications. With his letter John enclosed a handsome catalogue indicating that his nozzles were used for agriculture, industry and fire protection. As the catalogue stated: "Bete spiral fog nozzles operate on a radically different principle—they shear a continuous spiral sheet from a single jet, thereby producing a fine fog at relatively low pressures. Bete nozzles are non-clogging as there are no internal parts. Because of these exclusive features, a single Bete spiral nozzle can often replace a number of smaller conventional nozzles, and eliminate strainers."

Dick DeWolfe writes from Pasadena, Calif., to say that he has been very active in the local M.I.T. Club, of which he is now the vice-president. In January Dick's family had a new addition, James Winthrop, his fourth child—two boys and two girls. For the past two years, Dick has been principal development engineer with the Fluor Corporation, Engineers and Constructors for petroleum and chemical plants.

Oswald B. Falls, Jr., VI, writes from Schenectady, N.Y., to say: "I am presently manager-marketing of the atomic power equipment department of the GE Company. We are the one department of the company interested in the commercial applications of atomic power and so far have received a number of orders for atomic power equipment including one complete 180,000 KW power plant for \$45,000,000 which was sold to the Commonwealth Edison Company of Chicago. I have been in my present job for just one year and can vouch for the fact that it is certainly a fast moving business. Actually, at this very moment I am just in between two two-week sessions of an advanced marketing management course which our company is giving in New York. They teach us for two weeks and then give us two weeks back at the office to try to catch up on our work and then pour it to us again for another two weeks. When we get through, we are supposed to be real marketing managers.

"Since leaving M.I.T., I spent up until 1948 working in Pittsfield, but mostly in

Schenectady in electric utility application engineering. In 1948 I went to the Northwest District, making headquarters in Seattle, and was successively central station engineer for the district and then manager-product sales for the district until 1953 when I returned to Schenectady as manager-electric utility sales in the apparatus sales division. On about March 1, 1955, I took my present job." Oz goes on to say that he hopes to make the Reunion, but in view of the present job which he has, he cannot be sure until the last minute.

George Temple, VI, writes from West Springfield, Mass., to say that after three years on a project at the Institute he went with A. G. Spalding for stroboscopic photography and related development work, where he was engineer for capacitor manufacturing program during the war. Later, he went from methods engineering to plant engineer and then in 1954 switched from plant engineering to sales engineering with Wolverine Equipment Company of Cambridge, specializing in engineered air-handling systems, special dryers, and related equipment.

The word from Spence Mieras, IX-B, concerns his appointment in January as president and general manager of Warner Automotive Parts division of Borg-Warner Corporation, at Auburn, Ind.

Spence came to Borg-Warner from Miller Manufacturing Company, where he was a director and executive vice-president and general manager of their largest subsidiary, Bonney Forge and Tool Works.

Dick Odiome, IX-B, writes on the stationery of the Odiome Industrial Advertising Agency, Yellow Springs, Ohio, to say: "About seven years ago I started my own industrial advertising agency in, of all places, Yellow Springs, and we now handle a dozen and one-half blue chip accounts in our neighborhood which extends from Toledo on the North to Cincinnati on the South. There seems to be a continuing need for sales engineers who can write, or writers who are not afraid of engineering. I'm still growing and still looking for people who like the quiet ways of the country and at the same time would like to do top-notch industrial advertising. This is beginning to sound like a recruiting ad and if it does and you can get it in the magazine, so much the better."

Arthur K. Baker, VI, writes on the impressive stationery of the Baker Company, Maplewood, Maine, to say: "In 1947 I went back to the Institute and worked with Gordon Brown's group in servomechanisms. Figured I would take some more courses and therefore took a whale of a cut in salary to seduce them into accepting me. Eventually had some ideas for instrument ball bearing handling tools and equipment which looked as though they would be a good cellar workshop gadget that would sell enough to augment the income cut. First sale of these things was in June 1948 to Kollsman Instrument Division of Square D Corporation, an aircraft instrument outfit. Uncle Howard Hughes presently placed an order with us that almost sunk us, for a huge quantity, delivery right now. So I had to leave the Institute, set

up shop here in Maine and get going. We've grown about several thousand percent since and have about twenty employees now with no end in sight."

George Singer, VI, writes from Malden, Mass. to say that up until the present time he has been connected with the General Electric Company in Lynn, Mass., in their test department since 1942. However, their motor division is moving to Erie, Pa., and he will soon be without a job.

Charlie Holman, X, confirms the fact that last October he was transferred to Atlanta as general manager of Pittsburgh Plate Glass Company's paint division from Newark. As Charlie puts it: "My wife and family are moved into our new home at 2914 Edgeworth Drive N.W. and are all enjoying sitting out in our backyard in our shirt sleeves. My family consists of three boys, age 13 and 8-year-old twins."

Bernard Gordon, I, writes from San Francisco to say: "As of now I am with the firm of Porter, Urquhart, McCreary and O'Brien, Consulting Engineers, and am in charge of foundation engineering for their West Coast division, which covers generally the states west of the Mississippi. We do airport and highway design and construction as well as foundation studies for a wide variety of industrial, commercial and military construction. Am living in San Lorenzo, a residential community south of Oakland with my wife, three dogs and a cat. Outside interests include hunting, girl scouts and community activities."

The final word of good news of the Class comes from Captain Charlie Treccott, USN, at San Francisco. He says, "You can tell the boys that I presently have the best billet in the Navy—as Commander, San Francisco Naval Shipyard."

With these words and a notation that most of the news from 75 of the postcards has yet to be put in the Class Notes, this will have to end the Class of 1936 news in this issue. There will be more news in the next issue and those who get to the Reunion will be able to regale their Classmates with their stories. — HENRY F. LIPPITT, 2ND, *Secretary*, 30 Rockefeller Plaza, New York, N.Y.

• 1937 •

Robert Voegeler was named executive vice-president of Rollins Electronics Corporation of Lewes, Del. Bob was formerly a vice-president of International Telephone and Telegraph Company and received international publicity when he was imprisoned 17 months by the Communists in Hungary in 1950-51.

Roger Albiston has been named engineer-in-charge of the Providence, R.I., field office of the Army Engineers' hurricane survey unit. Let's hope he doesn't sight something like what happened last fall!

Stanley Zemansky has been appointed assistant to the general manager of the Autonetics Division of North American Aviation, Inc. After graduation from The Institute he completed special course studies at Cal Tech in Industrial Management, Personnel Management and Industrial Relations at University of California at Los Angeles and also a course in In-

dustrial Purchasing and Aircraft Industry Purchasing. Besides his present position he is also an instructor at UCLA for courses in both Industrial and Advanced Purchasing and Production Management. He has a wife and three children.

Mathew Rockwell formed a partnership with Francis Stanton in Chicago in 1946;—architects and consulting planners. They have recently purchased new quarters and admitted an associate partner. Their work has been in industrial, commercial and institutional fields.

Have a clipping here that Roger Wingate was seeking the position of town meeting moderator. He has served as vice-president of Liberty Mutual Insurance Company for the past several years. Wonder how the election turned out.

The Reunion next year should be a highlight in our years. "The twentieth for 57" would be a good rallying call, so let's give forth with effort to make the arrangements now. You know how those things are! If you plan it now it can all be ready for the whole family by next June. — WINTHROP A. JOHNS, *Secretary*, 766 Hyslip Avenue, Westfield, N.J.

• 1938 •

It seems that we West Coast contingent of the Class must once again make our presence known before we fall into the category of the lost. This being the June issue, it is practically the last opportunity before vacations to bring you all up to date.

Believe it or not but there was a slight effort to have a small Reunion of the Southern Cal branch of the Class in November to meet with Don Severence at my home to swap stories and experiences from the past 17 years. Unfortunately, only seven were able to attend.

Bill Shamban has been the successful head of W. S. Shamban Company for several years now, supplying Fluorocarbon and other specialized plastic products to military and commercial industry.

Howard Britton just left North American Aviation for Hughes Aircraft to organize a new test group for the Ground Systems Laboratories.

Bob Sessler is plant engineer with Lever Brothers in their new West Coast division.

Ralph Lebow is sales engineer with Parker Aircraft.

Jack Rosenberg is working on the development of machine tool automation for Electronic Control Systems division of Stromberg-Carlson. Incidentally, this division is headed by Len Mautner '39.

Yours truly is also at Hughes Aircraft working on special projects in the Ground Systems Lab.

Not able to attend were Al Minott who is with the C.A.A.; Don Weir whose camera and photo business keeps him hopping; and Harry Phinizy who just got out of the Air Force and is now at Lockheed Missiles.

Most of the above attended our very successful West Coast Symposium sponsored by the M.I.T. Club of Southern California and the Institute. In spite of our warnings, Don Severence would not spend an extra day or so out here basking in our nice summer weather but chose to spend two days in Chicago being snow-

bound. Maybe it would not be a bad idea to have the next Reunion out here. There would be a distinct possibility that more '38 men living here might attend.

From Paul Black we have this note: "Here's something for one of the later issues. As you know, I was out of action for most of the fall and early winter. Spent a spell in the Pratt Diagnostic Clinic. In exchange for a pot of gold they managed to straighten me out. Feel fine now. As for the business world, I was made manager of Sylvania's Avionics Laboratory last June. This is one (and largest) of three major groups that form Sylvania's new Waltham Laboratories occupying a new air-conditioned building on Route 128. Two weeks ago I was moved up to the position of program manager reporting to the general manager of our electronics systems division — it involves pulling together a large program we are working on as part of a major weapon system. Things change fast in this business."

There are, no doubt, many '38 men in this vicinity who have not gotten on my list. If so, this is my request to make their presence known to this Assistant Secretary or to Dave Acker who, I am sure, will forward them to me. — HAROLD H. STRAUSS, *Assistant Secretary*, 604 19th St., Santa Monica, Calif.; D. E. ACKER, *Secretary*, Arthur D. Little, Inc., 30 Memorial Drive, Cambridge, Mass.

• 1939 •

Top of the news this time goes to Phil Bush who is manager of the Atomic Energy Division, Kaiser Engineers, and who lives at 89 Meadow View Road, Orinda, Calif. In several articles published in the *Consulting Engineer*, Phil states that energy available from economically recoverable uranium and thorium is at least 20 times that recoverable from the conventional fossil fuels. Further, if utilization of atomic energy follows the pattern of the coal and oil utilization field, costs of energy from atomic sources may be competitive before many more years. Hilda and I spent a pleasant evening with Phil and his wife, Martha, at their home. For those who call on the Bushes I recommend the selection of Hi-Fi records, and delicious home cooking.

Speaking of published articles, I just saw one written by Eli Dannenberg who wrote about performance of Carbon Blacks in the February 1955 issue of *Industrial and Engineering Chemistry*.

Bob and Maisie Fife (who live just a block and a half away from us) report the arrival of number 4. The little Princess is named Martha and has been nicknamed "Muffins" by the other three.

Warren Evans called on us a year or two ago in Portland, and the other day in Oakland I learned that he is with Kaiser Engineers and occupying the office almost next door to Phil Bush's.

At the Western Regional Conference in Los Angeles, I saw Sam Sensiper. Sam is still with Hughes Company, Ph.D.-ing in the electronic tube business. Construction strikes in this area have delayed them in starting their new house.

Also at the regional conference were a number of other Alumni from classes of about the same vintage. Harison Phinzy '38, joined us at the dinner table and we

had a great time talking over lots of things involving George Cremer and Bob Casselman. Chauncey Bell '38 was also at dinner, and since Fred Grant married Chauncey's sister we had opportunity to develop some tales of adventures at the Chi Phi House. Don Severence '38, is Secretary of the Alumni Association and, in the crowd of nearly 400 Alumni, did a memory job on names and faces that puts him in a class with Lobby and Dean Pitre. Phil Stoddard '40 was also at the conference. We had hoped he would spare us some time and enjoy the ocean, the beach, and some rare, relatively-smog-free Los Angeles, but Phil declined our invitation saying that the New England gales, snowstorms, and driveway-shoveling required him to fly home starting at the crack of dawn on Sunday.

I was pleasantly surprised a few weeks ago to hear from John Noyes '38, who phoned from another section of Los Angeles to say he was here on a market survey. We spent an enjoyable evening which included a few bourbons, a good steak and a lot of reminiscing about the Phi Kap crowd and St. Louis.

On the home front I can report that I have just had a birthday and this week am especially conscious of being fat and forty. As the rest of the Classmates reach this estate and the word gets around mention will be made in this column.

And on page 368 of the March *Journal of Metals* there is a large picture of a handsome young man. Beneath the picture is this report: "Morris E. Nicholson has been appointed head, department of metallurgy, Institute of Technology, University of Minnesota, Minneapolis. He had been associated with the Institute for the study of metals, University of Chicago. Dr. Nicholson is a graduate of M.I.T., and holds the rank of major in the Army Research and Development Reserve Program." Congratulations, Morrie, from us all. — HAL SEYKOTA, *Assistant Secretary*, 416 Calle Mayor, Redondo Beach, Calif.

• 1940 •

Oliver Haywood, who is manager of the Waltham, Mass., laboratories of Sylvania Electric Products, has been honored by being elected a fellow of the Operations Research Society of America. Members of the Class are now dispersed to the four corners of the globe. One of our foreign ambassadors of good will at the present time is Robert Seedlock, Colonel and Deputy Commander of the Corps of Engineers, Mediterranean Division, who was among the officials who greeted Sultan Mohammed Sidi ben Youssef on the occasion of his return to Casablanca last February.

And that's the news in brief of '40 for this month. — ALVIN GUTTAG, *Secretary*, Cushman, Darby and Cushman, American Security Building, Washington 5, D.C. SAMUEL A. GOLDBLITH, *Assistant Secretary*, Rm. 16-325, M.I.T., Cambridge 39, Mass.; MARSHALL D. MC-CUEN, *Assistant Secretary*, 4968 West 14th Street, Indianapolis, Ind.

• 1941 •

By the time you read this, everything should be in readiness for the 15th Reunion at Plymouth; we hope that

everyone who can possibly attend does so. Contact Ed Marden, 233 Harvard Street, Brookline, if you've previously said "no" and your plans change. We'll see you there!

Bill Hooper has been named manager of Republic Etched Products, Inc., a concern incorporated last July to manufacture extra high purity etched aluminum foil for use in electrolytic capacitors for critical applications demanding maximum dependability. After leaving the Signal Corps in 1946, Bill joined Sperry Products, Inc., in Danbury, Conn., and was assistant general manager there when he left to take his new job. Bill Bowes, after 15 years with American Cyanamid Company, joined the atomic power division of the Westinghouse Electric Company in Pittsburgh on February 13; he is in the test planning group of advanced development and planning activities. Best of luck in your new jobs, men!

Our Class is beginning to look like a speakers' bureau, with the list going as follows: Ed Beaupre told a group of Nashua High School students of the need for engineers and scientists, and urged them to study math and science if they were interested in careers in these fields; Henry Anderson, of the atomic power equipment department of G.E., spoke to the Hartford Engineers Club on "Atomics and the Future"; Calvin MacCracken, President of Jet-Heet Corporation of Englewood, N.J., spoke on "Solar Energy and Heat Transfer" at a meeting of the Wilmington area section of the American Society of Mechanical Engineers; and Harry Wasserman, Assistant Professor of Chemistry at Yale, spoke on "Recent Aspects of the Chemistry of Epoxides" to the Connecticut Valley Section of the American Chemical Society.

We extend our sympathies to Roger Blum on the loss of his mother. — IVON W. COLLINS, *Secretary*, 28 Sherman Road, Wakefield, Mass.

• 1942 •

Laurie Beth Rosenblum appeared on the scene of life at 5:50 P.M. on March 21, 1956. Most providentially the trip to the hospital was made a day after the end of Boston's second (of three) blizzards in nine days. She was introduced to the world of photography when two hours old, and was recorded both fore and aft 24 times in the next 19 days. Sandy and I are immensely proud of our healthy, thriving, photogenic and loud daughter.

John H. Cantlin has been promoted to vice-president in charge of engineering of the Wilcolator Company of Elizabeth, N.J. He will now be responsible for the research, design, and development of the company's products, chiefly precision thermostatic temperature controls for gas and electric appliances. Prior to his joining Wilcolator in 1954 John was assistant general manager and chief engineer of Fenwal, Inc.

There have been many miles travelled by '42 men in the past few months. The long distance record unquestionably goes to William W. Kellogg — Bill left Seattle, Wash., for The Hague, Netherlands. Should any European travellers be looking for him this summer, his address is

Shenkade 75, c/o SHAPE Air Dev Test Center. Other many mile movers were Reynold L. Caleen, from Manchester, Conn., to Encino, Calif., and Mrs. Phyllis B. Olly from Mill Valley, Calif., to Tallahassee, Fla. Also Curtis D. Buford is now in Rocky River, Ohio; John H. Dockstader is in Hopkinton, Mass.; Harold G. Elrod, Jr. is in White Plains, N.Y.; Clarence H. Fogg, Jr., is in San Bernardino, Calif.; Robert C. Gentry is in Washington, D.C., with the U.S. Weather Bureau.

Donald P. Greatorex has moved to Arlington, Va.; Walther F. Hagestad to New Orleans and is with the Canal Barge Company; Robert R. Insanide to Pittsfield, Mass.; Edwin B. Judd to Gonic, N.H. (population less than 100); David Lambert to Newport, R.I.; Sutton Monro to Coopersburg, Pa.; Joseph E. Welsh to Brookline, Mass.; and Leo E. Wilson to Ft. Worth, Texas. We also have a note that Donald D. Kilner is a professor of mechanical engineering at Northwestern University in Evanston, Ill.

The announcement, in the April Notes, of Jack Sheetz's appointment as executive secretary for development at M.I.T. has been amplified in the Institute Gazette section. Please refer to page 297, Technology Review for April 1956, for more details about his activities in connection with the Institute's annual contributions programs.

We just received a call from Jim Hoey, President of the Class of '43, telling us of proposals for an off-year get together on the weekend before Alumni Day. The suggestions are that a Saturday night cocktail dance and Sunday noon clambake be held on June 9 and 10 by the Classes of '42, '43, and '44 (both wings). Please drop me a post card if you are interested in the goings on. — LOU ROSENBLUM, *Secretary*, Photon, Inc., 58 Charles Street, Cambridge 41, Mass.

• 1943 •

Although all the details have not yet been worked out for the affair, I am pleased to announce that there will be a combined informal Reunion of the classes of 1942, 1943 and 1944 on Alumni weekend of June 9 to 11, in Cambridge. Class President Jim Hoey, Jr., has been in conference with Lou Rosenblum '42, and Scott Carpenter '44, with the following results: There will be a cocktail party and dinner on Saturday, June 9, and a seaside clambake on Sunday afternoon, June 10. The purposes of the combined Reunion are to renew our acquaintances with our neighboring classes and to provide some dazzling activities for the long distance Alumni for the whole weekend. Details of these doings will be mailed to one and all shortly.

Word has been received that Lew Lipshutz has been promoted to project engineer at the IBM Research Laboratory in Poughkeepsie, N.Y. In his new position Lew is in charge of developing tape transport devices and new tape units for electronic data processing machines. He joined IBM in 1951 as a technical engineer, and was promoted to associate engineer in 1954. Lew and his wife and daughter live at 11 Park Avenue, Poughkeepsie.

Glancing at the change of address no-

tices, I find that John Lipford's new home is at 303 Sunset Drive, Greensboro, N.C., and that D. Read Stevens, Jr., is at National Standard Corporation, Niles, Mich.

I had a nice chat with Ed McClaud, who recently moved back to West Hartford, Conn., from Wilson, N.C., where he was in the heating, plumbing and air conditioning business. He is in the engineering department of the Parker Stamp Works, Hartford. Ed and Harriet have two daughters, Lynda, 9, and Pamela, 5, and live at 15 Brighton Drive, West Hartford. These notes will reach you just before the June Reunion, and should be an inspiration to all to be there and participate in the grand program which has been planned. I look forward to meeting with you again. — RICHARD M. FEINGOLD, *Secretary*, 49 Pearl Street, Hartford 3, Conn.

• 1944 •

It is with regret we pass on the announcement from Paris, France, that our Classmate, Seth Bransby, passed away the latter part of 1955. No details are available except that he was employed by the Foster Wheeler Corporation.

Austin Dodge was at the Institute and I had an enjoyable talk with him at that time. Since leaving the Institute he was ordered to Princeton as an ensign in the Navy's Indoctrination School. After completion of this course he went to General Motors Institute of Technology in Flint, Mich., where he studied diesel engines used in amphibious craft. This led to overseas duty in the Pacific on various L.S.T.'s. The Navy returned him to civilian life in July, 1946. After a brief period in Akron, Ohio, with the B. F. Goodrich Company as test engineer, he returned to his native Washington, D.C., where he attended George Washington University Law School. The LL.B. degree was given in 1949 and he was admitted to the District of Columbia Bar the same year. Since starting law, and up to the present he has been associated with his father, Parker Dodge '07 in the firm of Dodge and Sons, specializing in patent matters.

The big year, Austin says, was 1949 for in addition to passing the bar, he married Lucy Ann Hapeman. They are now the proud parents of John 5, Cynthia 2 and a new arrival who should be on the scene by now. For the past four years they have lived at 546 Harwood Road in Bethesda, Md.

Down at the Atlas Powder Company in Wilmington, Del., Bob Reilly and Jim Weaver have moved up the line. Bob has been appointed director of the newly formed economic evaluations department in the chemical divisions. The new department will conduct economic studies on all projects and expenditure programs for the division. Bob picked up a master's degree in Business Administration from the Wharton School in 1951 and worked for the Atlantic Refining before joining Atlas in 1953.

Jim Weaver is a technical economist since joining Atlas in 1954. Jim picked up his master's degree at M.I.T.

Warren Howard has been with G.E. apparatus sales division for the last six

years. Warren moves up to sales manager of the company's industrial power rectifier unit division in the West Lynn plant.

Gardner Alden is with Bay State Abrasive Products in Westboro, Mass., and has been recently promoted to senior development engineer.

Paul Heilman is living in Warrensville, Ohio, just outside Cleveland with his wife, the former Mary Ellen Davis of Omaha, and his daughter Maritza. Paul is with Reliance Electric selling motors. He is in charge of distributor operations and has just been made export manager. Paul writes that Bob Metzgar is also with Reliance in the production department. When Lew Tyree hits Cleveland from time to time he gets together with Paul and the story swapping goes on into the night.

This June on the Saturday and Sunday prior to Alumni Day the Classes of '42, '43, '44 and '45 are planning a get-together for a dance, clambake, and so on, to liven up the week end and enjoy some congenial elbow bending. The place has not been picked as yet but you can expect a card in the mail shortly giving time, place, and approximate cost. Mail the card back if you plan to come as it will be our only means of keeping the record straight on those who plan to come. See you then. — BURTON A. BROMFIELD, *Secretary*, 72 Woodchester Drive, Weston 93, Mass.

• 1946 •

Gene Parish, our correspondent on the 10th Reunion Committee, sent us the following communication, reproduced verbatim and unedited.

"Preliminary returns show 60 Class members already recorded in favor of supporting Eager Beaver at the GOB (Grand Old Beavers) convention June 8 through 10 at the Hotel Curtis in Lenox, Mass.

"If you lost your official ballot (or didn't get the first convention notice) send word to E. H. Tebbetts, 100 Memorial Drive, Cambridge, Mass. Tell him that you are coming, or at least you are still on the fence. You will be a favorite son of M.I.T.

"Boss Herter and proteges Maynard and Mathews are deep into program planning for your greater enjoyment of the great week end."

In case you haven't received the earlier announcements (in the interests of economy mailings were restricted to those we thought would be interested or who live in the East) don't get mad — just drop a line to Ned Tebbetts and say you are coming. See you there. — WILLIAM M. SIEBERT, *Secretary*, 5 Martha's Point Road, Concord, Mass.

• 1951 •

JUNE — THE TARGET MONTH FOR THE FIRST FABULOUS FIFTH YEAR REUNION OF THE CLASS OF 1951. And now since I cannot look into the crystal ball to tell when you read this, let me hedge and play both sides of the fence. First, if you men and women of '51 receive this Review issue before June 10, and if you are still undecided as to coming, by all means call, wire your

local travel agency for arrangements to join the grand Reunion. And now, if you receive this issue after the Reunion, may I say to all who attended that I hope you had a wonderful time. For the Classmates who were unable to attend, I hope that the second fifth year Reunion will make it possible for you to join the festivities.

Last word on the Reunion before going to press in mid-April. The response has been wonderful from the reports I have received. And I am sure that the Reunion Committee has done an excellent job in organizing the affair and in keeping you informed of what and how things were shaping up.

And now a word about Class Elections. As you already know, information about the elections was made available to you through some mention here, by reference in Art's letter to you, and by data from the Nominating Committee. And at this date, the results will be in. The Class of 1951 starts its second fifth year period away from M.I.T. with new officers at the helm. We hope that you will extend to them the wonderful support that you have tendered to Art Wasserman and your Secretary during the past five years.

Our Class Treasury at this point is in good shape thanks to the wonderful response from many of you to help finance Reunion planning, to help bring the Class up to date on our activities, to finance the general Class Elections, and to provide funds to cover past operating expenses and the future needs, and finally, to provide a base from which planning can commence on the big second Reunion. And now let me switch to the general news area by closing with this comment: in the next issue, I shall tender a general report on my secretarial and financial activities during the past five years.

News Items; Pete Keller is now in the Cambridge area working at the M.I.T. Instrumentation Lab. Avron Handleman is keeping busy at the Monsanto Chemical Company (Inorganic Chemical Division) at the Dayton, Ohio, plant. Mark Franklin still enjoys that wonderful California weather — he is still operating from San Diego. Incidentally, your Secretary and his wife, Irene, almost found themselves as residents of San Jose, Calif., a few weeks ago. IBM is putting up a new plant in that vicinity and your Secretary had an offer to go. Upon evaluation of the wonderful cultural and educational values still not completely utilized by us on the East Coast, we decided to stay here. But let me reassure the Classmates on the West Coast that area holds greater promise now than even that promised by Horace Greeley when he said: "Go West young man." And after surveying the battering we got from Mr. Snow this past winter, I can see us buying a couple of bicycles in a couple of years and heading West. George B. Field is keeping busy at the Harvard College Observatory.

Recently I visited M.I.T. to interview engineers for my department (manufacturing planning) at IBM. I met Nick Melissas'52 who is an assistant in Dean Brook's office. Nick tells me quite a few Classmates have drifted back to the Boston area and work in this vicinity or are

associated with M.I.T. in some phase or activity. Incidentally, for the Course XV-A men who may read this, we have a few openings at IBM Poughkeepsie. In fact, I need a couple. A brief word about my department. It is a unique one in that it handles functions as planning product transfers, short and long range forecasting of manpower, space, and equipment requirements, developing requirements in space and manpower to meet new production schedules, and other related functions as part of our assignment from management. This area is particularly challenging in view of the tremendous dynamic characteristics of IBM and its growth pattern over the last few years and the accelerating trend in the future. This area provides an excellent chance to use my XV-A background and the B School training.

Other News: In the marital area we find other Classmates making the news. Bill Kell and Elaine Whitehead were married in January at Wollaston. Bill is an assistant engineer at the Central Technical Department of the Bethlehem Steel Company at Quincy. Paul Mort and Isabelle Tether said "I do" in February at Bronxville, N.Y. Paul is doing engineering work at IBM. Gordon Oxx and Carole became man and wife in February: the ceremony was performed in the Calvary Episcopal Church, Burnt Hills, N.Y. Gordon is employed at the General Electric plant in Schenectady, N.Y. And Gil Stevens and Helen Burkett became engaged in January with the marriage to take place in June. Gil is stationed at the Army Chemical center at Edgewood, Md. Congratulations and best wishes to you all! Joe Tamsky was named New Britain's (Conn.) planning director in January. Dick Moroni, having left the jet plane piloting career with the Air Force, is now at M.I.T. in the D.I.C. activity. And now Station SJM signs off until next month. — STAN MARCEWICZ, *Secretary*, c/o The Lorraine, Route #2, Highland, N.Y.

• 1952 •

Stan Sydney and Bob Briber have taken over the Secretary's job for this issue. Stan Sydney writes:

Fifth Reunion next year. Hardly seems possible that four years have passed since graduation. Nick Melissas is general chairman of the committee planning the Reunion. You will be hearing more about the Reunion in future issues of *The Review*.

J. J. Humphries is studying for his master's degree at M.I.T. in the Department of Metallurgy. Also pursuing an academic program in the Boston area is Jimmie DeVito. He has three boys now, twins two and one-half, and a baby ten months old. Jim is doing design work at New England Power and Service Company; evenings he is studying at Northeastern.

Happy birthday to Jo Ellen Shein, one year old June 15. Proud papa Arthur is settling down in Boston doing architectural design now that he has finished his stint in the service.

Working locally at Epsco Inc., an electronics firm, is Jim Stockwell. Jim has two children now, Sandra Cassatt, age

two and James Wear, four months old.

Bock Chain is working for General Electric in their West Lynn plant. Bock is in the instrument department.

After working with the Welsh Construction Company on a tunnel project in the Catskills, Jack Coughlin is now working with his family in the Coughlin Construction Company doing general construction work here in Massachusetts. Jack is still single, one of the few surviving bachelors in the Class.

Herb Eisenberg has diminished these ranks by one at any rate. Herb was married on March 3 in Boston to Melissa Jane Lees of Florida. Herb is now working for Copley Steel Products as a manufacturer's representative. Herb and Melissa have set up housekeeping on Beacon Street here in Boston.

J. Burgess Jamieson, III, first saw the light of day on April 11 of this year. Welcome aboard, young man.

Bob Briber writes:

I would like to digress just a bit from the normal procedure in this Class Notes column. Stan Buchin regularly, and Stan Sydney above, have done a fine job in keeping you posted about your friends. I can't add much. This time, instead, I would like to get some free advice from you, if you're willing. I'm staying in Room 10-203, M.I.T.; so a postcard with your comments would be valuable.

A) You are probably beginning to realize that we're planning a Reunion for next June. Part of the success of a Reunion, but only part, depends upon getting lots of people to show up. If you have an idea as to how we can promote this affair so that people will show up, I'd like to hear it. I will promise you that I won't leave you on a limb: the people who come will have a good time, so your effort won't be wasted. I'm serious about this — send me your ideas, please.

B) There is another question some of us have kicked around. Should we, in trying to raise some money for the Alumni Fund, aim for more people giving and ignore the amount, or aim for lots of money and ignore the number giving? For the past four years I have favored the first. Now I'm beginning to wonder. I realize you may be a little sensitive about this money business, but it is a necessary thing for the Institute. I suspect, also, that it may be good for the man giving for he gets associated closer with the Institute. Anyway, what do *you* think? More money, or more people? — ROBERT BRIBER, *Secretary*, Room 10-203, M.I.T., Cambridge, Mass.

• 1953 •

Early this month I happily received a letter from a former Ins Com colleague. Gil Gardner went on active duty with the Air Force two years ago and after finishing his pilot training in the States, he and his family were assigned to a troop carrier squadron in Europe. Thus far he has spent fourteen months over there; six months just outside Frankfurt, and then the entire "wing" was transferred to a base in France about 60 miles from Paris. His assignment is that of copilot on a troop carrier with the additional duties of assistant adjutant.

Gil mentions the effect that the recent cold snap in Europe has had on his unit's operations. He has spent much time flying food and clothing to Italy as well as carrying out the routine missions of flying high priority goods throughout the European area.

Those of you who read last month's notes may recall the observation that the married ones among you have an advantage as far as newsworthy items are concerned, namely additions to the family. Well, Gil had something on this subject; he and his wife now have two boys and one girl; the most recent one was six weeks old at the time the letter was written.

With the exception of slightly crowded living conditions the Gardner's are very well satisfied with Air Force life. With two years remaining on his current tour, Gil hopes to return to an ROTC assignment at M.I.T. with a chance to work on his master's degree. His thoughts presently are to make the Air Force his career.

I have also received word of an engagement and a marriage occurring during the month of January. Henry "Hank" Draghi and Miss Jane Sickles Bring are engaged to be married. Miss Bring is a graduate of the Massachusetts General Hospital School of Nursing. She also attended Adelphi College and now, is on the staff of the Hartford Hospital. Hank is working for the government in Washington, D.C.

Donald Tarinelli and the former Vivian Hathaway were married on January 15 in Bridgeport, Conn. Don finished his army tour in the Far East last fall and is vice-president of his father's construction company. Vivian attended Wellesley College and was a member of the Aetna Insurance Company's personnel staff prior to marriage.

The sky outside my third floor window portends an April shower—a good atmosphere for continuing the review for final exams! See you next month. — VINSON W. BRONSON, JR., *Secretary*, 18 Mellen Street, Cambridge, Mass.

• 1954 •

I mentioned several months ago that Dick Morley was engaged, but that I didn't know the lucky young lady's name. To clarify the situation, I quote in full a letter I received a few days ago. "Dear Ed, The name is Shirley Anne Coughlin Webb Simpson. Signed, Dick's Future." I guess that clears that up. Sincere felicitations, Richard. And best wishes to you, Shirley. Another expansion on a previously reported item comes from Matt Baczewski, who, like Bill McTigue, is spending his time in the Army rowing. Matt says that he and Paul Gross are on temporary duty with the Detroit Boat Club. They are preparing for the U. S. Olympic Trials at Syracuse later this month. Some people have it made.

Jack Preschlack is "isolated on an 800 square mile (Air Force) reservation in Northwest Florida." He is working on the testing and development of tactical bombing systems with the Air Force Armament Center. He claims that he will be out of uniform soon, and intends to hit Harvard Business School in Septem-

ber. The distaff side of the Class, in the person of Marilyn Leader, writes from Boston. Marilyn is working in General Electric's Small Aircraft Engine Department in Lynn, Mass., as a specialist, engineering communications. She also sends along several other items. Jean Fisch and her husband are living in Darien, Conn., where Jean is working with an architectural firm. Jerry Perlstein is stationed in Augsburg, Germany, with the 11th Infantry Regiment. Charlie Shaw is a research assistant with the Mechanical Engineering Department at M.I.T. And, Marilyn says that she believes Will Fiske is a contracts officer with the Air Force at Bedford.

From West Lafayette, Ind., Mal Hepworth reports that he and Ed Sunderland are plugging away at their doctorates at Purdue University. Mal also writes that Carlos Roggero, who is working for the Cerro de Pasco Corporation in Peru, is thinking of returning to M.I.T. for some graduate work. Dean Jacoby writes from Tulsa that the airstrips in Colorado are too high for the Air Force to fly into, so he wasn't able to manage a free skiing trip this past winter. But he philosophically accepts this along with the other "difficulties and sorrows of the service." However, he did manage two weeks in Florida, Nassau and New Orleans in March. Difficulties and sorrows, indeed! According to Dean, Art Haines is having great sport at Guilford College in North Carolina, teaching plane and solid analytic geometry, college algebra, calculus, mechanics and freshman mathematical analysis. I'll have to admit that list beats my algebra and calculus classes at St. Louis University. Oh, well, I'll probably live longer, Art. Art's wife, Beverley, by the way, graduates from Guilford this month.

On other fronts, Dick Walker is stationed at Webb Air Force Base, Texas, at last report. Harold Drooker is at Fort Bliss, Texas, and Art Evans has shipped out into the wide Pacific with the Army. John Maris is drawing his paycheck at American Machine and Foundry in Pacoima, Calif. George Wendell is with General Electric in Utica, N.Y. Charles Leonard and Antonia Colby of Newton Centre, Mass., will be married next month. Congratulations, kiddies. Charlie is an engineer with the Link Aviation Corporation, Binghamton, N.Y. And I am very sorry to have to report the death of Thorkel Haaland, who passed away in Pullman, Washington, in January. — EDWIN G. EIGEL, JR., *Secretary*, 3654 Flora Place, St. Louis 10, Mo.

• 1955 •

This has been a lean month as far as news is concerned. You people just have not been good to your poor Secretaries.

The bright spot this month was a literary gem from Dave Rados. Steady customers of these pages will remember that Dave is now at Wright-Patterson Air Force base in Ohio. This latest letter does not have the nostalgic flavor that the previous ones have had, so evidently Dave is enjoying his life out there pretty well. Coupled to the letter (by means of a device commonly known as the staple) was a mimeography entitled "The Com-

pleat Rados — Being An Account of His Stay at Wright-Patterson AFB, and How He Met and Slew the Air Force." We wish that we had room to reprint this masterpiece, but maybe it might be a better idea to save it for the Fifth Reunion or something. Dave did such a good job that we are thinking of sending him to Class Notes to be "Ra-dosed" before going to press.

Four engagements have become known to us recently. George Edmunds, Jr., and Sally Lynn Reeves of Pittsfield, Mass., became engaged in March. George is now at the Instrumentation Lab at M.I.T. and doing graduate work concurrently. James Inman and Judith Hinten of Toronto, Ontario, and Tufts College were engaged in April. They expect to be married July 7 in Toronto. Jim is now with Westinghouse. Shimshom Frankenthal and Joan Newman of Noroton, Conn., were engaged in March, and married in May. Shim is now at the Raytheon Company in Waltham.

Way back in September, Mel Weiner and Florence Cohen of Brookline and Connecticut College for Women were engaged. They will be married in June. After a honeymoon in Jamaica, Mel plans to begin work for Chu Associates in Framingham.

We know that more of you must have taken the fatal step. How about letting the rest of your Classmates in on the news?

Tidbits: The class of '56 didn't seem too original when they extrapolated from our "Busting Out" theme of Senior Week to their "Blasting Off." Since '55 graduated the place just hasn't been the same! Our reporters from the Far West have been pretty quiet this month, Dave. Harry and Peg Schreiber have been seen around campus pretty regularly now that Harry is out at Devens. He really seems to love the Army life. Oscar Hedland has been putting Harry to work as rumors have it, whenever he shows his head around the field house. We guess that Oscar thinks that shooting a starting gun must be just up his alley. "Old Trackmen never die, they just fire away." — enough corn!

This about wraps it up, kiddies. How about more help for the next issue? — DELL LANIER, *Secretary*, 3011 Vernon Place, Cincinnati, Ohio. L. DENNIS SHAPIRO, *Assistant Secretary*, Room 10-483, M.I.T., Cambridge, Mass.



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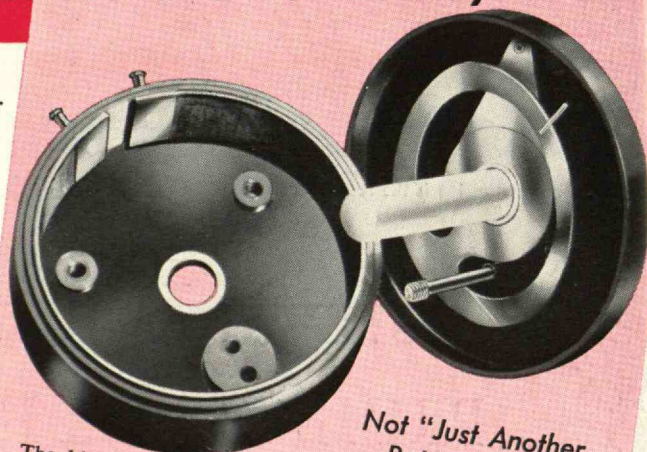
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